AN ASSESSMENT OF ABANDONED MINES IN NORTHERN SASKATCHEWAN (YEAR 3)

New Mylamaque Adit--URANIUM CITY AREA
SEPTEMBER 30, 2002

MAY, 2003

PREPARED FOR:
SASKATCHEWAN ENVIRONMENT

An Assessment of Abandoned Mines in
Northern Saskatchewan

File R3278 May 2003

Prepared for:

Saskatchewan Environment

Prepared by: Clifton Associates Ltd.
on behalf of
P.A.N.S. Joint Venture

Executive Summary

Northern Saskatchewan contains an abundance of mineral wealth associated with the Canadian Shield. Exploration for minerals in Saskatchewan can be traced back to the early part of the century. Beck (1959) provides a comprehensive description of mineral occurrences in the Precambrian Shield of Northern Saskatchewan and a description of Uranium Deposits (1969) in the Athabasca Region. These reports provide an extensive listing of previous work completed in northern Saskatchewan dating back to 1916. The reports completed by Beck have since been supplemented by numerous studies and research programs aimed at developing the mining industry in Saskatchewan.

Exploration activities and mining operations were not regulated to the extent of present requirements. Exploration sites and mining operations were abandoned with little, if any, regard to environmental protection, public safety or aesthetics. As a result the vast majority of sites (in general, pre 1980's) were abandoned with no closure activities. Many of the sites have since deteriorated through natural degradation processes and vandalism, leaving in some cases, significant public safety hazards and possible long-term environmental concerns.

In the late 1980's, Saskatchewan Environment and Public Safety (a predecessor to Saskatchewan Environment), established the 'Abandoned Mines Remedial Action Program'. The program identified the abandoned mining operations in Saskatchewan, including all 'hard rock' mines in the north and coal mines in the south. Many of the abandoned coal mines had significant public safety hazards with large numbers of people living nearby. As a result, coal mines were prioritized in terms of remedial action requirements. Abandoned mines in the north were also inspected as resources permitted. However, many of the northern mines were not inspected when the program was terminated in the early 1990's due to budget constraints.

A proposal for funding to establish an Abandoned Mines Assessment Program was approved under the Province of Saskatchewan's Centenary Fund in July, 2000. The purpose of the program was to complete assessments of northern sites and prioritize the sites based on public safety and environmental concerns. The prioritization is a risk-based assessment in which sites that present the most significant public safety and/or environmental concerns are ranked highest.

The assessment program began in 2000 (Year 1). Several sites in the Uranium City, La Ronge and Creighton regions were inspected and assessed. In 2001 (Year 2), the program continued with attempts to assess all remaining abandoned uranium mines that were not assessed in Year 1. In addition, some gold and base metal sites in the Uranium City and La Ronge regions were assessed during Year 1. In 2002 (Year 3), the program continued with an assessment of numerous abandoned gold and base metal sites in the Creighton Region, along with follow-up assessments of some abandoned uranium mines in the Uranium City Region.

This report provides a detailed description of the Year 3 assessment activities. Abandoned mines and exploration sites in northern Saskatchewan (mainly in the Creighton Region) that pose potential environmental / public safety concerns were identified. This risk based approach identified and prioritizes the sites in terms of most hazardous to least hazardous.

An ownership review was completed to determine the status of claims or leases on the areas that contain the abandoned sites. The ownership review was completed through a search of the Saskatchewan Industry and Resources ‘Saskatchewan Mineral Deposit Index’ (SMDI) files. The files were searched both electronically and in person at Saskatchewan Industry and Resources offices in Regina.

Table E-1 provides the cumulative ranking of each of the sites assessed in Year 3. The total numerical value attributed to each site is the combined total of the public safety ranking score and the environmental ranking.

With the completion of the Year 3 program described in this report, all known abandoned mines in northern Saskatchewan have been assessed.

Table E-2 provides a list of all sites assessed during the three years of assessment and the corresponding risk ranking in order from highest to lowest.

Table E-1
Site Ranking - Year 3

Site	Public Safety Score	Environmental Score	Total Score (out of 51)	Ranking (Worst to Least Worst)
Coronation Mine	14	19.5	33.5	1/26
Prince Albert Mine	16	11	27	2/26
Amisk Syndicate Mine	13.5	9.5	23	3/26
Graham Mine	15.5	6	21.5	4/26
Bearcat Showing and Prospect Shaft	10	10	20	5/26
Vista (Bootleg) Mine	12.5	7	19.5	6/26
Newcor Mine	12.5	7	19.5	7/26
Amisk (Beaver) Gold Mines	10	9	19	8/26
Laurel Lake North Gold Zone	10.5	8	18.5	9/26
Dion Lake Copper Showing and Shaft	13	5	18	10/26
Flexar Mine	9	8.5	17.5	11/26
Beaver Mine	8.5	8	16.5	12/26
Waverly Island Occurrence	9	6.5	15.5	13/26
Hannay (Bessie Island) Deposit	8.5	5.5	14	14/26
Wekatch Gold Mines	10	4	14	15/26
Sonora Deposit	10.5	3	13.5	16/26
CAM Option Cu Showing	9	3.5	12.5	17/26
Phantom Lake Mine	10	2	12	18/26
Neely Lake	8	4	12	19/26
Lucky Strike Mine	8.5	3	11.5	20/26
SYE / Sunset Exploration Shaft	10	1.5	11.5	21/26
Birch Lake Mine	7	4	11	22/26
Henning Maloney Mine	8.5	2	10.5	23/26
Otonadah Lake Cu Showing and Exploration Shaft	7	1	8	24/26
Star Occurrence	6	1	7	25/26
Ace Deposit	4	1	5	26/26
Namew Lake	N/A	N/A	N/A	not ranked
HBMS Flux Pit	3.5	4	7.5	not ranked

Table E-2
Year 1 - 3 Combined Scores

Ranking	Site	Year Assessed	Public Safety Score	Environmental Score	Total
1	Gunnar	2	22	28.5	50.5
2	Box	2/3	1/19	1/18	37
3	Rottenstone	2	13	23.5	36.5
4	Anglo-Rouyn	1	20.1	15	35.1
5	Coronation Mine	3	14	19.5	33.5
6	Gulch	2	19.5	11.5	31
7	Lorado Mill Site	2	10.5	18.5	29
8	Prince Albert Mine	3	16	11	27
9	Western Nuclear	1	11.1	17	28.1
10	Baska	2	15	10.5	25.5
11	Lake Cinch/Cenex	1/3	18	7	25
12	Nesbitt-Labine-Eagle Mine	1	17.5	7	24.5
13	Consolidated Nicholson	2	16.5	7	23.5
14	Amisk Syndicate Mine	3	13.5	9.5	23 (Tie)
15	Waste Disposal Area 2	1	14	9	23 (Tie)
16	Consolidated	1	13.5	9	22.5
17	Graham Mine	3	15.5	6	21.5
18	Nesbitt	2	14.1	7	21.1
19	Bearcat Showing and Prospect Shaft	3	10	10	20
20	Newcor Mine	3	12.5	7	19.5 (Tie)
21	Vista (Bootleg) Mine	3	12.5	7	19.5 (Tie)
22	Nesbitt-Labine-ABC Mine	1	12.4	7	19.4
23	Cayzor	1	15	4	19 (Tie)
24	Amisk (Beaver) Gold Mines	3	10	9	19 (Tie)
25	Laurel Lake North Gold Zone	3	10.5	8	18.5
26	Dion Lake Copper Showing and Shaft	3	13	5	18
27	Flexar Mine	3	9	8.5	17.5 (Tie)
28	Uranium Ridge	1	11.5	6	17.5 (Tie)
29	La Ronge	2	13.45	4	17.45
30	Pitch-Ore	1	11.2	6	17.2
31	Black Bay	1	13	4	17
32	Rix-Athabasca, Zone 62	1	11.7	5	16.7
33	Beaver Mine	3	8.5	8	16.5 (Tie)
34	Rix-Athabasca-Smitty Mine	1	13.5	3	16.5 (Tie)
35	Meta	1	11.4	5	16.4
36	Rix-Athabasca-Leonard Mine	1	11.3	5	16.3
37	New Mylamaque	2/3	11.1	5	16.1
38	Lorado Mine Site	1	10.6	5	15.6
39	Waverly Island	3	9	6.5	15.5 (Tie)
40	Preview Lake	2	10.5	5	15.5 (Tie)
41	St. Michaels	1	11.3	4	15.3
42	Caba	2	11.1	4	15.1
43	Don Henry	2/3	10	5	15
44	National Exploration-Keiller Adit	1	8.7	6	14.7
45	Territorial	2	10.15	4	14.15
46	Wekatch Gold Mines	3	10	4	14 (Tie)
47	Hannay (Bessie Island) Deposit	3	8.5	5.5	14 (Tie)
48	Beaverlodge-Mickey Lake	2	10.9	3	13.9
49	Sonora Deposit	3	10.5	3	13.5 (Tie)
50	Pitching Lake	2	10.5	3	13.5 (Tie)
51	National Exploration-Pat Claims	1	10	3	13 (Tie)
52	Athona	2	10	3	13 (Tie)

Table E-2 - Cont'd
Year 1 - 3 Combined Scores

Ranking	Site	Year Assessed			Total
53	CAM Option copper Showing	3	9	3.5	12.5
54	Amax Athabasca (Site 1)	1	9.4	3	12.4
55	Phantom Lake Mine	3	10	2	12 (Tie)
56	Neely Lake Mine Site	3	8	4	12 (Tie)
57	Homer Yellowknife	2	9.6	2	11.6
58	SYE/Sunset Exploration Shaft	3	10	1.5	11.5 (Tie)
59	Lucky Strike Mine	3	8.5	3	11.5 (Tie)
60	Birch Lake Mine	3	7	4	11
61	Jahala	2	7.5	3	10.5 (Tie)
62	Consolidated Beta Gamma	2	9.5	1	10.5 (Tie)
63	Henning Maloney Mine	3	8.5	2	10.5 (Tie)
64	Waste Disposal Area 1	1	5.4	5	10.4
65	Jesko	2	8.5	1	9.5
66	Nisto Mines Ltd.	1	4.4	5	9.4
67	Rix Athabasca, No. 10 Adit	1	6.4	2	8.4
68	Otonadah Lake Copper Showing and Exploration Shaft	3	7	1	8
69	Eldorado, Eagle Mine	1	5.9	2	7.9
70	Star Occurrence	3	6	1	7
71	Strike Lake	1	6.5	0	6.5
72	Amax Athabasca (Site No. 2)	1	6.3	0	6.3
73	Ace Deposit	3	4	1	5
74	Pitch-Ore	2	3.2	1	4.2
75	Amax Athabasca (Site No.3)	1/3	4	0	4
	HBMS Flux Pit	3	3.5	4	Not Ranked - Sand Pit
	Rix Athabasca	2	-	-	Not Available-Not Located
	Namew Lake	3	-	-	Site Decommissioned - Water Sample Only

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1.0 Introduction

Saskatchewan Environment issued a Request for Proposal dated 16 May 2000 for the assessment of abandoned mining operations in northern Saskatchewan. The Shield EcoRegion of Saskatchewan Environment initiated the project in 2000 through funding provided from the Province of Saskatchewan's 'Centenary Fund'.

The objective of the abandoned mines assessment program is to assess abandoned mining and exploration sites in northern Saskatchewan which may present public safety and/or environmental concerns. The purpose of the assessments is to gather the information necessary to rank the sites based on health/public safety and environmental concerns. Information gained from the field investigations along with existing historical site information will also be used to provide the basis for estimating the cost to remediate the sites in order to remove or minimize potential public safety, health and environmental risks.

The program was designed to be completed over a three year period. Work commenced in 2000 (Year 1) and continued in 2001 (Year 2). The final year (2002 – Year 3) is the focus of this report. This document provides the results of the assessments completed on sites in the Uranium City and Creighton Regions in the fall of 2002.

Clifton Associates Ltd. acting on behalf of the PANS Joint Venture, completed all assessments described in this report in 2002.

The assistance of Mr. James Augier, Mr. Dan Augier of Uranium City and Mr. Andy Sewap of Denare Beach was essential in the completion of the site assessments in the Uranium City and Creighton Regions. Their historical knowledge of the regions and assistance with mobilization made locating the sites much easier.

Mr. Rick Bennett of Saskatchewan Industry and Resources provided information necessary to evaluate ownership and current claims on the sites.

Throughout this document, reference is made to 'Saskatchewan Environment and Public Safety', 'Saskatchewan Environment and Resource Management' and 'Saskatchewan Environment'. Saskatchewan Environment and Public Safety became Saskatchewan Environment and Resource Management in April 1993 which subsequently became Saskatchewan Environment in March 2002. Correct document referencing requires using the Department name that was in effect at the time the document was published; therefore, Saskatchewan Environment and Public Safety is used to reference Department documents prior to April 1993, whereas Saskatchewan Environment and Resource Management is used to reference Department documents from April 1993 to March 2002. Saskatchewan

Environment is the current Department name. Likewise, ‘Saskatchewan Energy and Mines’ became ‘Saskatchewan Industry and Resources’ in March 2002. Documents published prior to March 2002 are therefore also referenced using the Department name that existed at the time of publishing.

2.0 Background

Northern Saskatchewan contains an abundance of mineral wealth associated with the Canadian Shield.

Exploration for minerals in Saskatchewan can be traced back to the early part of the century. Beck (1959) provides a comprehensive description of mineral occurrences in the Precambrian Shield of Northern Saskatchewan and a description of Uranium Deposits (1969) in the Athabasca Region. These reports provide an extensive listing of previous work completed in northern Saskatchewan dating back to 1916. The reports completed by Beck have since been supplemented by numerous studies and research programs aimed at developing the mining industry in Saskatchewan.

Many mining and exploration sites were not decommissioned to current standards.

In the late 1980’s, Saskatchewan Environment and Public Safety (a predecessor to Saskatchewan Environment) established the ‘Abandoned Mines Remedial Action Program’. The program identified the abandoned mining operations in Saskatchewan, including all ‘hard rock’ mines in the north and coal mines in the south. Many of the abandoned coal mines had significant public safety hazards with large numbers of people living nearby. As a result, coal mines were prioritized in terms of remedial action requirements. Abandoned mines in the north were also inspected as resources permitted. However, many of the northern mines were not inspected when the program was terminated in the early 1990’s due to budget constraints.

A proposal for funding to establish an Abandoned Mines Assessment Program was approved under the Province of Saskatchewan’s Centenary Fund in July, 2000. The purpose of the program was to complete the assessments of the northern sites.

In the fall of 2000, (Year 1) 26 mine sites and 2 waste disposal sites (associated with two of the mine sites) were assessed. Each assessment involved identification of the development that occurred at the site; ownership history; current conditions of the site; site assessment and ranking; documentation of the remediation requirements and acquisition of digital photographs of the site. Gamma readings were taken at the uranium sites and water samples were collected at sites where water was either ponded or flowing from a mine facility (such as an adit). Refer to the report 'An Assessment of Abandoned Mines in Northern Saskatchewan (KHS Management Group Ltd., March, 2001)' for further information on the results from Year 1.

In 2001 (Year 2), the program continued with attempts to assess all remaining abandoned uranium mines that were not assessed in Year 1. In addition, some gold and base metal sites in the Uranium City and La Ronge regions were assessed.

In 2002 (Year 3), the program continued with attempts to assess: (a) all remaining abandoned uranium mines that were not assessed in Year 2 and (b) abandoned mining and exploration sites in the Creighton Region.

This report provides a detailed description of the Year 3 assessment activities and includes all issues included in the Year 1 and Year 2 programs. Upon completion of the program, it is expected that all abandoned mine and exploration sites in northern Saskatchewan that pose potential environmental/public safety concerns will have been assessed. This risk based approach identifies and prioritizes the sites in terms of hazardous to least hazardous.

The recommendations from this report will be used to develop cost estimates for remediation of the sites.

3.0 Assessment Criteria

3.1 Development of Assessment Criteria

Due to the subjective nature of conducting environmental audits and site assessments, criteria have been established and used in the assessment of the abandoned sites. Application of these criteria ensures that a consistent set of identifiers is used for each site thereby providing uniform assessment results for each site. Field personnel with a high level of expertise in conducting assessments of abandoned mining operations is essential in ensuring competent and uniform assessments are completed.

In an attempt to minimize subjectivity, a set of assessment criteria was established and used in the Year 1 assessments. In order to maintain consistency in all three years work, the same set of assessment criteria was used in 3 as were used in Years 1 and 2.

A checklist was developed and used for each site assessment. The checklist contained a comprehensive list of issues to be assessed. The checklist covered possible issues that would likely be a concern at a typical abandoned mine/exploration site. Each site differed from the next site, depending on the type of mining or exploration activities, remediation work completed at the time of abandonment or since abandonment, effects of vandalism and site deterioration due to natural weathering forces.

3.2 Criteria

Following is a listing of the criteria used for each assessment. These criteria are consistent with those used in Year 1 and Year 2.

3.2.1 Site Description

- Specific Location [coordinates in Universal Transverse Mercator (UTM) using a GPS set to Northern American Datum (NAD) 27]
- Review of existing site records
- Type of operation (commodity type)
- Accessibility
- Date of Assessment
- Ownership
- Date of operations
- Type of remediation completed subsequent to abandonment
- Surrounding environment description

3.2.2 Description of Openings

- Raise[1] adit[2], shaft[3], trench[4], pit[5]

[1] A 'raise' is a vertical or inclined excavation from underground workings upward to the surface typically used for providing fresh air, emergency escapeways or allowing stale air to be removed.

[2] An 'adit' is a horizontal or slightly inclined excavation, usually on a hillside and typically used to gain access to mineralization.

[3] A 'shaft' is a vertical or slightly inclined excavation from the surface used to gain access to underground mineralization, to transport workers underground and for hoisting waste rock and ore from underground to the surface. A prospect shaft is excavated to explore the

- Specific location of opening noted on site map
- Dimensions of openings
- Condition of openings and whether or not there is any type of barrier to restrict access
- Evidence of water, either standing or flowing
- Associated structures (head frame-if present- description and condition)
- Assessment of level of hazard associated with opening

3.2.3 Sealed Openings

- Raise, adit, shaft, trench
- Specific location of opening noted on site map
- Type of closure method
- Condition of closure
- Evidence of liquid discharges from sealed openings
- Assessment of level of hazard associated with opening

3.2.4 Open Pits

- Location
- Dimensions (size of pit perimeter, orientation, and depth)
- Slope stability and angles
- Presence of vegetation, water or debris in pit
- Accessibility and escape for wildlife
- Presence of any warning markers
- Assess level of hazard

3.2.5 Mine De-watering Activities

- Evidence of mine dewatering
- Presence of dewatering lines and apparent location of discharge
- Examination of apparent discharge area for environmental concerns (lack of vegetation, signs of acidic discharge, oxidation or precipitation of minerals)

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continuation of near surface mineralization, and generally are less than several tens of metres deep.

[4] A ‘trench’ is a surface excavation usually long and linear in shape and from a few metres to tens of metres deep. Trenches are excavated to explore the near surface for mineralization.

[5] A ‘pit’ is a surface excavation usually only a few metres deep. Pits are excavated to explore the near surface for mineralization.

3.2.6 Waste Rock Disposal Area(s)

- Location(s) of waste rock
- Dimensions and estimated volumes of waste rock
- Vegetation encroachment
- Mineralogy
- Evidence of acid generation
- Gamma readings[6] at uranium sites
- Slope stability and angles
- Assessment of level of hazard
- Assessment of level of risk to local ecosystem health

3.2.7 Tailings Disposal Area

- Location(s) of tailings
- Physical description (size, colour, mineralogy)
- Dimensions and estimated volumes of tailings and location of sample (if any)
- Type of containment, stability and erosion potential through surface water runoff or wind erosion
- Vegetation encroachment
- Evidence of acid generation, oxidation and mineral precipitation
- Evidence and location of water ponding and location of sample (if any)
- Gamma readings at uranium sites
- Slope stability and angles
- Assessment of level of hazard
- Assessment of level of risk to local ecosystem health

3.2.8 Drill Holes

- Location and number
- Evidence of artesian conditions (if artesian sample collected)
- Assess level of hazard (protruding drill stem) and evidence of ecosystem damage

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[6] Gamma radiation is an electromagnetic radiation similar to x-rays (Western Canadian Naturally Occurring Radioactive Materials (NORM) Committee, 1995). In this report, the radioactive dose rate is expressed in terms of microsieverts per hour (μSv/hr).

3.2.9 Drill Core Storage

- Location and method of storage
- Size of storage facility and estimated amount of core
- Identification numbers of core boxes
- Condition of storage facility
- Gamma readings at uranium sites

3.2.10 Waste Disposal Sites

- Location and dimensions
- Type and volume of debris
- Containment works (if any)
- Level of hazard
- Level of damage to ecosystem

3.2.11 Buildings and Site Related Facilities

- Location and type of building on site
- Condition of building
- Type of building material, presence of asbestos
- Contents in buildings
- Structure stability
- Assess level of hazard to public and wildlife
- Description of related structures (electrical substations, transformers, power lines)

3.2.12 Presence of Hazardous Materials

- Type of material
- Volume
- Type of containment and stability of containment
- Evidence of leaks
- Assess level of hazard to public safety, wildlife and ecosystem

3.2.13 Scrap Material

- Location of material

- Type and volume
- Assess level of hazard to public, wildlife and ecosystem

3.3 Field Assessment Checklist

Prior to initiating fieldwork, a checklist was developed. The checklist contains a comprehensive inventory of potential issues that should be assessed at abandoned mines. Given the varying nature of each of the sites, not all issues on the checklist are applicable for each site. However, the list provided a consistent method for evaluating the sites.

The checklist is the same as was used in Year 1 assessments. Using the same checklist ensures that a consistent approach to site assessment is carried out from year to year.

A sample of a completed site assessment form is provided in Appendix A.

3.4 Site Assessment Scoring

As part of the program design, a numerical ranking was given to specific issues at each abandoned site. The numerical ranking removed some of the subjectivity in the assessment process.

Following is the rationale for establishing the numerical ranking as taken from the Year 1 assessment report (KHS Management Group, 2001).

> *In an effort to further reduce the subjectivity of the assessment, in each category a numerical "score" of the public safety and environmental risk for each of the listed elements was established. This was done in order to account for the fact that some categories pose a more significant risk than others. For example, unsafe buildings pose more of a public safety risk than do most scrap materials and generally, tailings pose more of an environmental risk than does waste rock.*
>
> *Similarly, it must also be recognized that each element within a particular category may pose a different level of risk depending on the character of that element at a particular site. For example, acid generating waste rock presents more of an environmental risk than benign waste rock and therefore will receive a higher total risk value. Such variations must be taken into consideration when assessing the overall risk posed by a particular site or when the risks associated with a particular site is compared to those of other sites.*
>
> *Table 1 presents a description of the scoring level assigned in each category.*
>
> *The total risk posed by each site was then assessed by completing the following steps:*
>
> 1. *A detailed audit was conducted of each site using the template provided;*

2. *During the audit, each risk to public safety and/or to the environment was identified, recorded and assigned a risk value of between 1 and 6 (with 6 representing the highest risk);*

3. *After completing the entire site audit, all category risk values were added to produce the overall site risk value; and,*

4. *The overall site risk value for each site was used to rank each abandoned site which allowed for a comparison of all sites audited in the fall of 2000.*

It should be noted that in some categories the risk value ranges from 0 to 3 while in others the risk value ranges from 0 to 6. This variation is necessary as some categories pose a higher overall risk than others and this difference must be accounted for. A risk value of 0 indicated that no risk was identified.

In instances where there was more than one item in each category, (i.e. two adits at the same site) each item was assessed individually. The two were then combined and assessed /reviewed to arrive at a total risk value for the item.

By following these steps, those sites posing the most significant risk to public safety and to the environment will receive a higher site score that those posing less of a risk.

The assessment and scoring system allows for a maximum score of 51 (excluding gamma readings) for an individual site with the minimum score approaching zero.

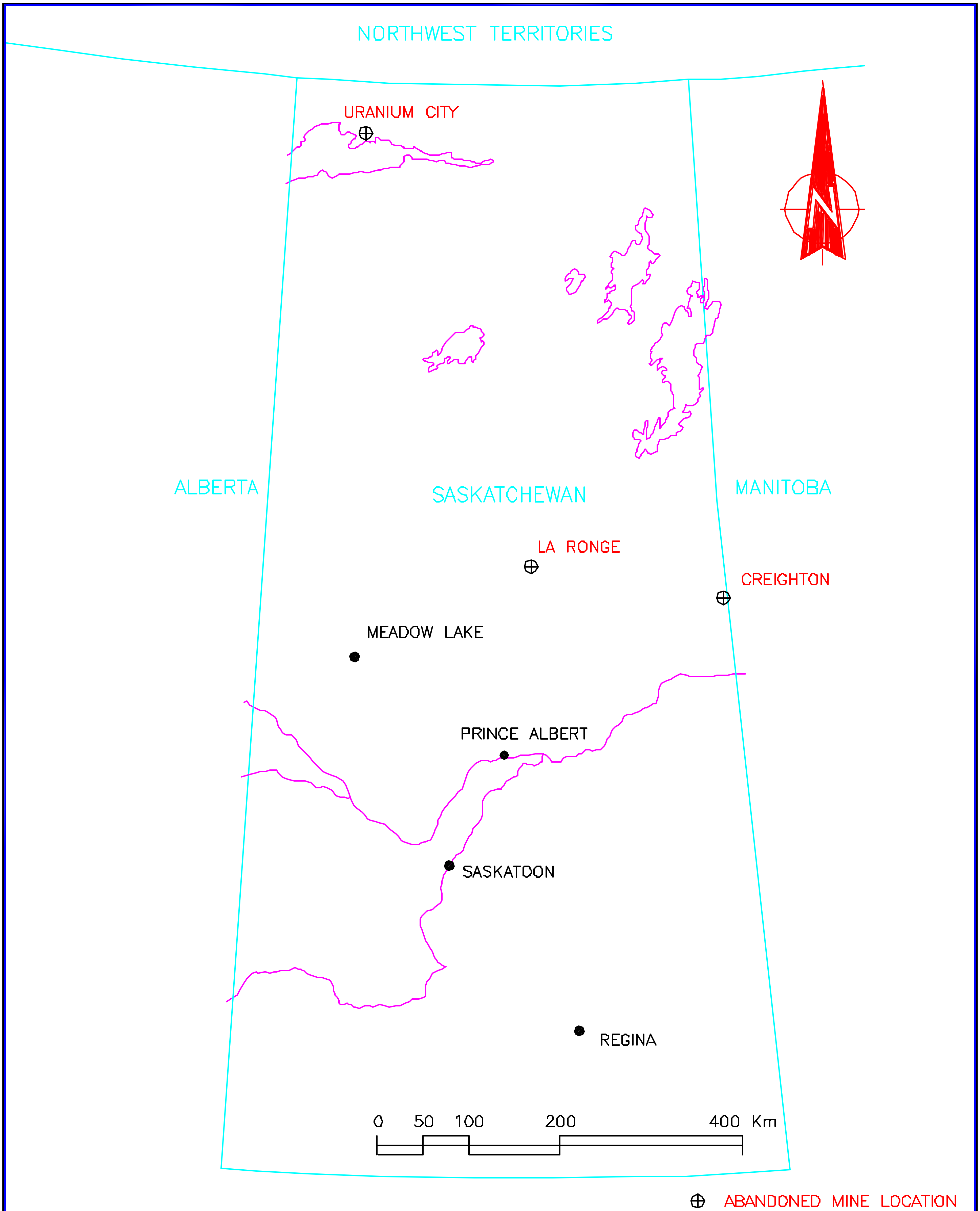
Table 3.1 provides a description of the scoring categories used for the assessment and the number of points applicable to each category.

4.0 Inventory of Sites

As part of the Request for Proposal, the Shield EcoRegion of Saskatchewan Environment provided a list of abandoned sites to be assessed. In addition to the list, consultations with the local Conservation Officer, who is very familiar with the Uranium City region and abandoned sites, was made to determine if any additional sites should be checked.

Table 4.1 provides a list of sites that were assessed and the year that they were assessed. Figure 4.1 shows the locations of the areas of abandoned mines in Saskatchewan.

Initially, 67 sites in northern Saskatchewan were identified as requiring further research and potentially requiring site audits. The 67 sites included 41 sites in the Uranium City area, 6 in the La Ronge area and 20 in the Creighton area. Upon completion of the program a total of 78 sites were assessed including 45 in the Uranium City Region, 4 in the La Ronge Region



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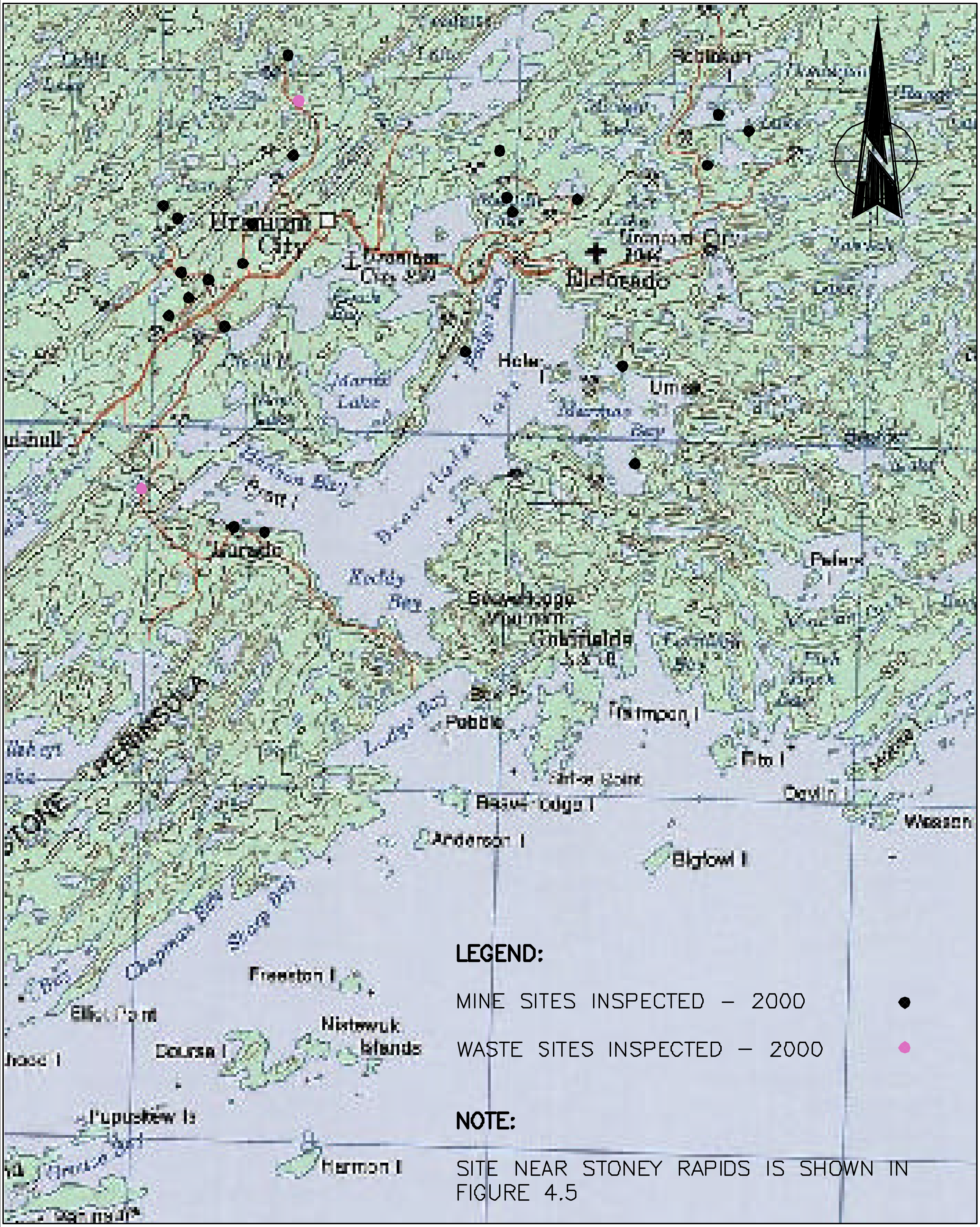
MINES IN SASKATCHEWAN

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.1

and 28 in the Creighton Region. This total does not include the Gunnar Mine and Lorado mill site, which are regularly assessed by Saskatchewan Environment.

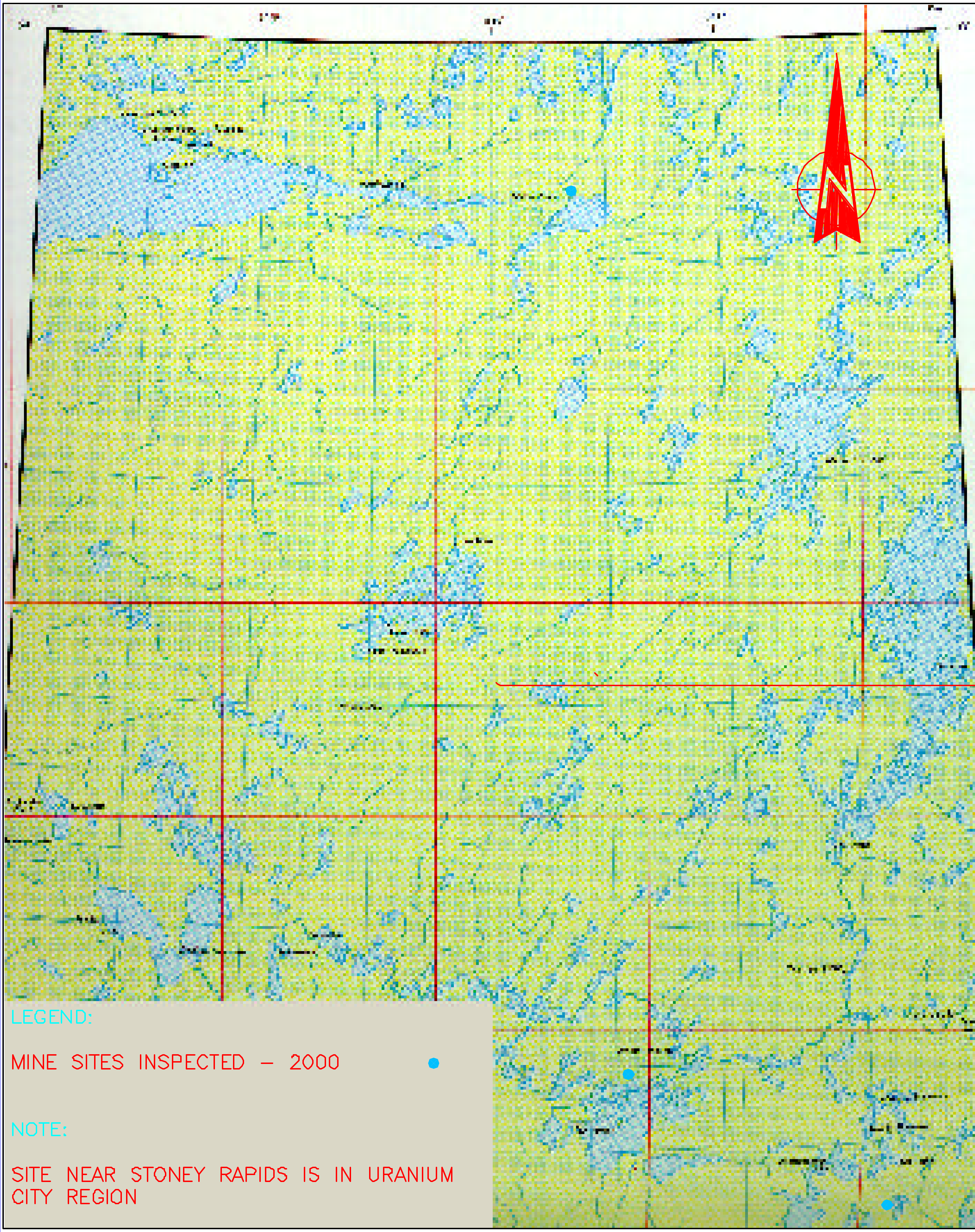
In Year 3, a total of 33 sites were assessed during Year 3 program. This included 6 sites in the Uranium City Region that were assessed as part of follow-up to year 1 and 2 activities and 27 sites in the Creighton Region. Two of the sites in the Creighton Region were not ranked, since one (Namew Lake) was a water sample collection point associated with a mine in Manitoba, and the second (HBMS Flux Pit) was a reclaimed sandpit not listed in the Saskatchewan Mineral Deposit Index (SMDI) inventory. A third site (Otonadah Lake Cu Showing) was not visited due to time and ground condition constraints but was assessed on the basis of an aerial fly-over inspection and historical knowledge of the site.

Figures 4.2 and 4.3 show the locations of sites assessed in Year 1 in the Uranium City and La Ronge Regions, respectively. Figure 4.4 and 4.5 show the locations of sites assessed in Year 2 in the Uranium City and La Ronge Regions, respectively. Figures 4.6 and 4.7 show its locations of sites assessed in Year 3 and the Uranium City and Creighton Regions, respectively.



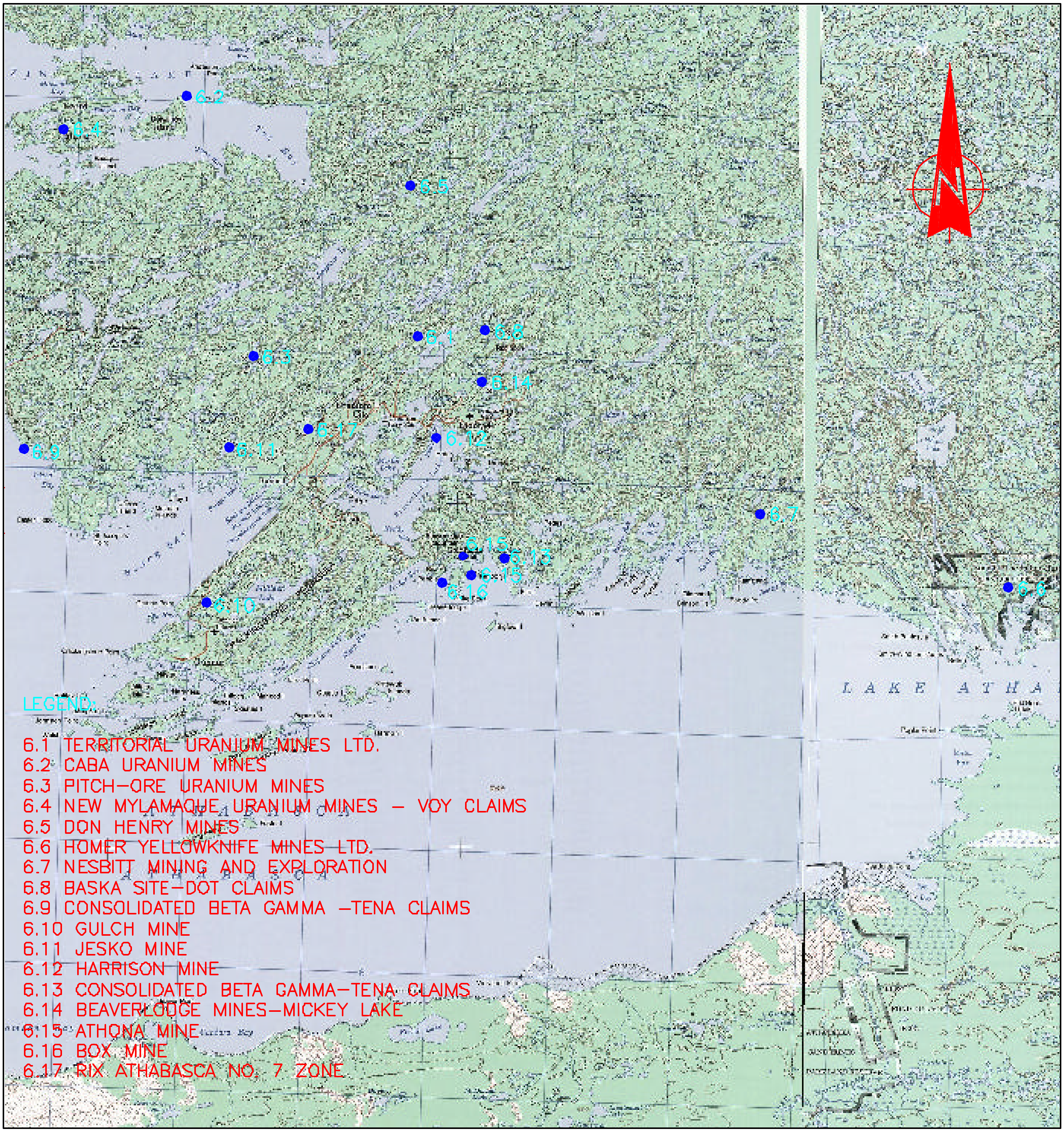
LOCATION OF SITES ASSESSED IN THE URANIUM CITY REGION – YEAR 1

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.2



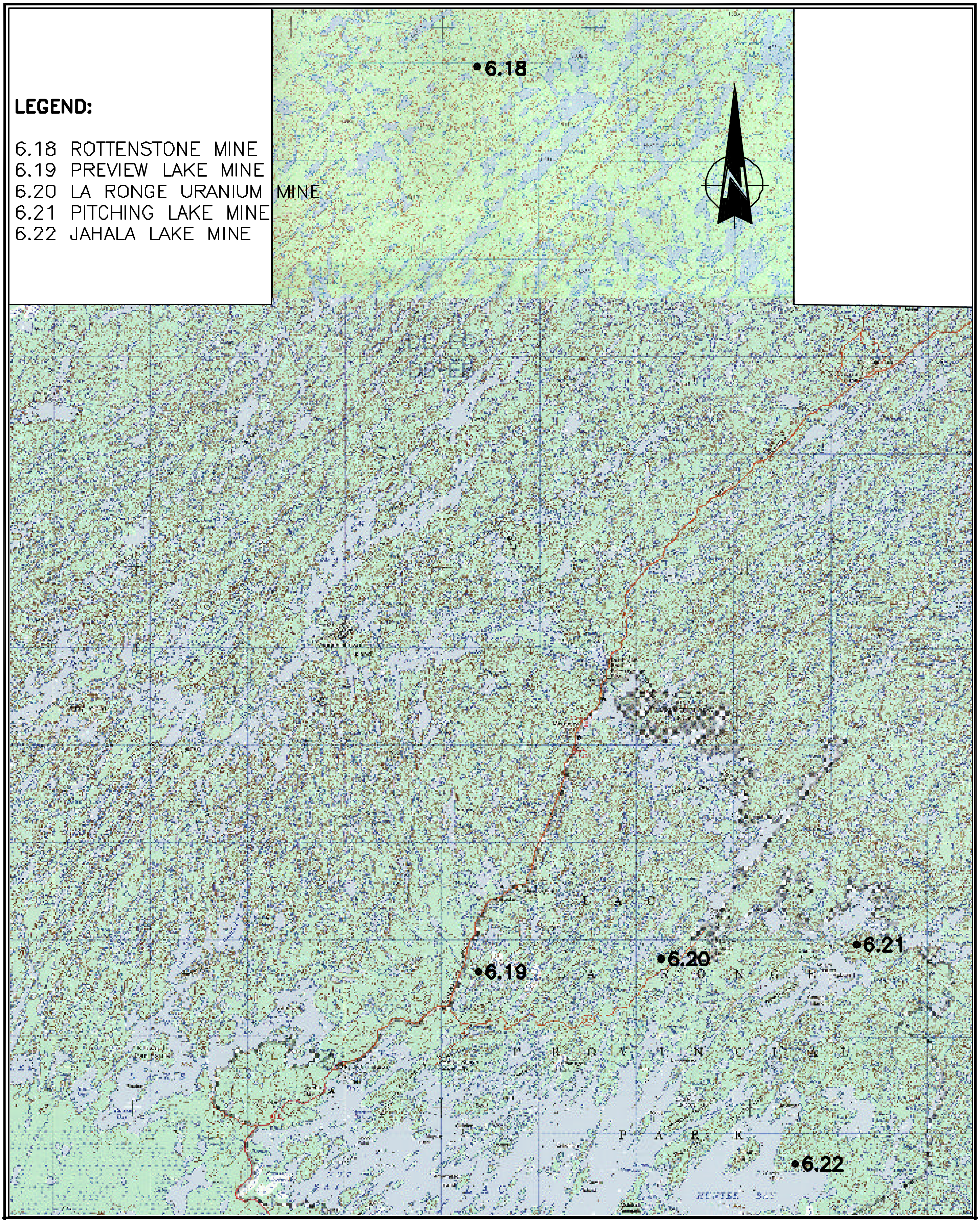
LOCATION OF SITES ASSESSED IN THE LA RONGE AND CREIGHTON REGION – YEAR 1

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.3



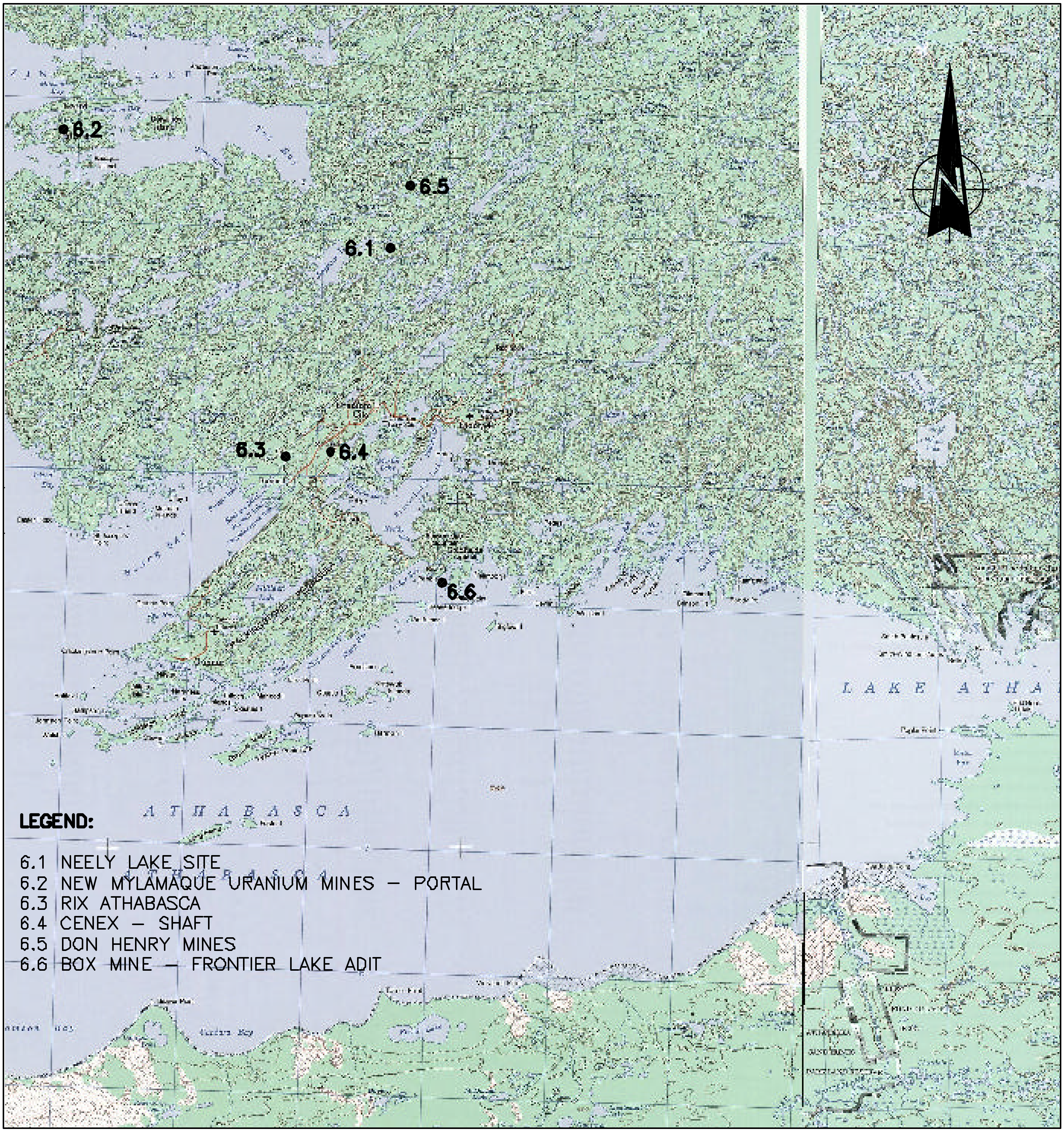
LOCATION OF SITES ASSESSED IN THE URANIUM CITY REGION - YEAR 2

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.4



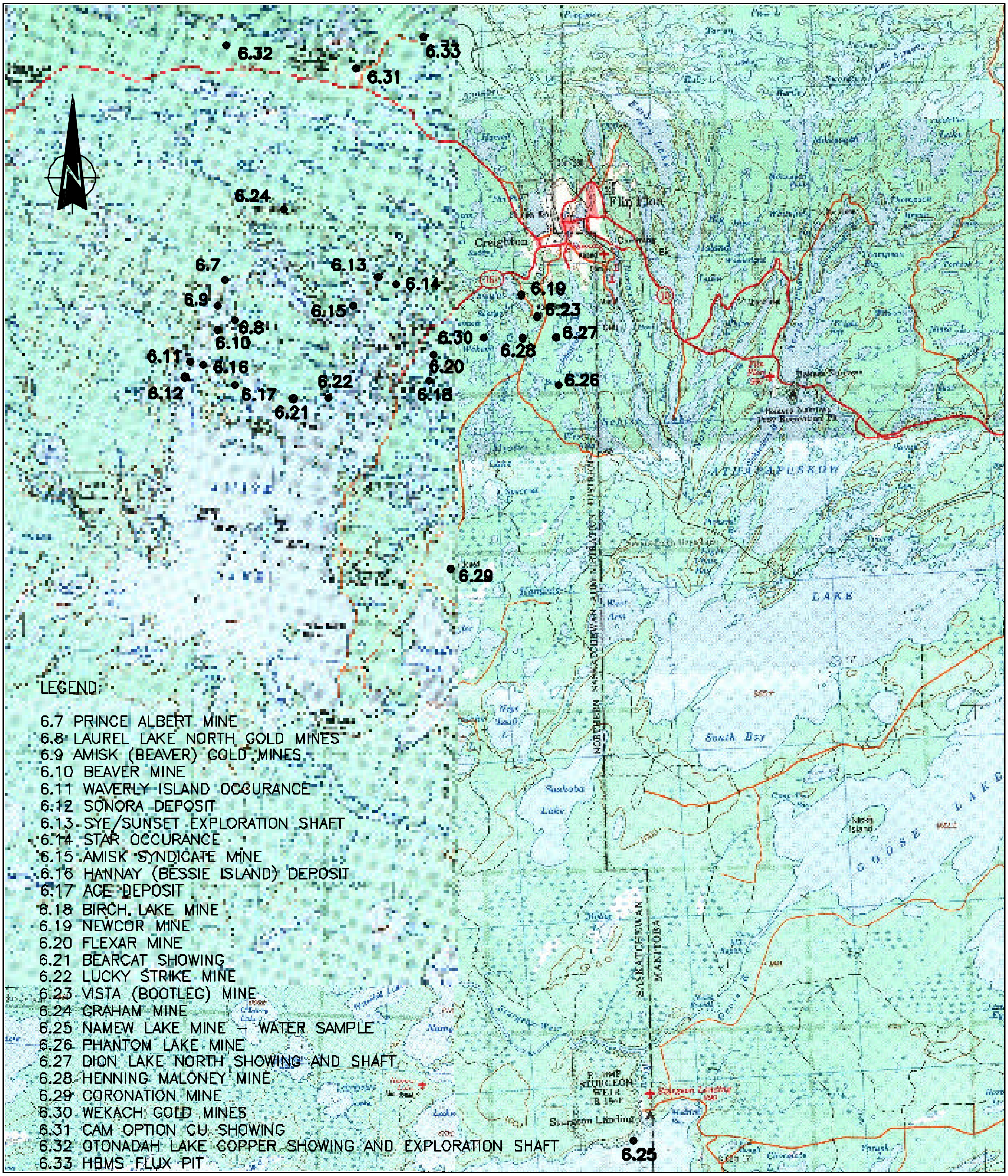
LOCATION OF SITES ASSESSED IN THE LA RONGE REGION – YEAR 2

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.5



LOCATION OF SITES ASSESSED IN THE URANIUM CITY REGION – YEAR 3

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.6



LOCATION OF SITES ASSESSED IN THE CREIGHTON REGION – YEAR 3

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 4.7

Table 3.1
Scoring Summary

Public Safety Scoring
Accessibility 1 = boat, snow machine or float plane. 2 = access consists of a long walk through an unmarked or overgrown road (>500 m) 3 = drive and short walk (<500 m) 4 = drive directly to site and openings Closure Method 0 = sealed with concrete; in excellent condition 1 = sealed with concrete; deteriorating condition 2 = sealed with rock or steel grate; no slumping or access through grate 3 = covered with rock, steel grate or debris; slumping or grate with openings (<1 m^2) 4 = covered with rock, grate or debris; large opening (>1 m^2) 5 = no closure and easily recognizable 6 = no closure and blind opening Waste Rock Stability 0 = no waste rock detected 1 = no steel slopes 2 = steep slopes (<5 m in height) 3 = steep slopes (>5 m in height Gamma Survey Weighted average readings Buildings and Foundations 0 = no buildings or foundations 1 = foundations only; good condition; level to ground 2 = foundation deteriorating; above ground level 3 = foundations and buildings; deteriorated; falling debris hazard; fall height hazard Scrap Material 0 = no scrap material 1 = small amount; no pile 2 = moderate amount; small pile <2 m in diameter) 3 = large amount; pile (>2 m in diameter) Additional Public Safety Risks A ranking of 0 to 3 can be assigned depending on any special circumstances that may warrant an additional public safety concern. These must be judged on a site specific basis and will be described as needed.
Environmental Risk Scoring
Accumulated Water 0 = no water on site 1 = small amount; ephemeral 2 = small amount; ponded 3 = large amount; ponded Liquid Discharge 0 = no discharge 1 = ephemeral discharge 2 = small persistent discharge 3 = large persistent discharge Waste Rock Character 1 = average gamma reading <2.00 µSv/hr/low acid generating potential 2 = average gamma reading >2.00 µSv/hr/medium acid generating potential 3 = average gamma reading >2.00 µSv/hr/high acid generating potential

Table 3.1 – Cont'd
Scoring Summary

Environmental Risk Scoring – Cont'd

Waste Rock Location
- 0 = no hazard
- 1 = hazard; near body of water
- 2 = hazard; runoff into body of water
- 3 = hazard; in body of water

Tailings Characteristics
- 1 = average gamma reading <2 µSv/hrh/low acid generating potential/covered or low metal/radionuclide content
- 2 = average gamma reading <2 µSv/hr/low acid generating potential
- 3 = average gamma reading >2 µSv/hr/medium acid generating potential/low metal and radionuclide content
- 4 = average gamma reading >2 µSv/hr/high acid generating potential or medium acid generating and high metal/radionuclide content
- 5 = average gamma reading >2 µSv/hr/high acid generating potential and exposed or high metal/radionuclide content

Tailings Location Regarding Environment
- 0 = no hazard
- 1 = hazard; near body of water
- 2 = hazard; runoff into body of water
- 3 = hazard; in body of water

Scrap Material
- 0 = no hazard
- 1 = low threat of contamination (example: bag of cement)
- 2 = moderate threat of contamination (example: empty chemical containers, product drums)
- 3 = high threat of contamination (example: mill fines)

Risks to Wildlife
- 0 = no hazard
- 1 = possible hazard due to gamma readings, habitat, etc.
- 2 = hazard; elevated gamma readings, habitat, etc.
- 3 = ponded water, residual chemicals, habitat, etc.

Additional Hazards to Environment

A ranking of 0 to 3 can be placed here depending on any special circumstances that may warrant an additional environmental concern. These must be judged on a site specific basis and will be described as needed.

Table 4.1
List of Sites Assessed

Region	Sites Assessed		
	Year 1	Year 2	Year 3
Uranium City	Amax Athabasca Uranium Mines Ltd. showing No. 50-CC1-61	Baska Uranium Mines Ltd.	Neely Lake Mine
	Amax Athabasca Uranium Mines Ltd. showing No. 49-CC1-11	Beaverlodge Uranium Mines Ltd.	***New Mylamaque-Adit
	Amax Athabasca Uranium Mines Ltd. showing No. 50-CC1-39	Caba Uranium Mines Ltd.	**Don Henry Mine-Shaft
	Black Bay Uranium Mines Ltd.	Consolidated Beta Gamma Mines Ltd./Northshore Deveolopers -Tena Claims	***Rix Athabasca-Trench
	Cayzor Athabasca Mines Limited	Consolidated Nicholson Mines Ltd.	***Cenex-Shaft
	Consolidated Beta Gamma Mines Ltd.	***Don Henry Mines Ltd	***Box Mine-Adits
	*Eldorado Nuclear Ltd.-Eagle Mine	Gulch Mines Ltd.	
	Lake Cinch Mines Ltd.	R.J. Harrison Mines Ltd.	
	***Cenex Mines Ltd.	Homer Yellowknife Mines Ltd.	
	Lorado Uranium Mines Ltd. (Mine Site).	Jesko Uranium Mines Ltd.	
	Meta Uranium Mines Ltd.	Nesbitt Mining and Explorations Ltd.	
	National Explorations Ltd.-Keiller Adit	***New Mylamaque Mines Ltd.	
	National Explorations Ltd.-Pat Claim, C Zone	Pitch-Ore Uranium Mines Ltd.-Orb Claims	
	Nesbitt-Labine Uranium Mines Ltd.-ABC Mine (Site 1)	Rix-Athabasca Mines Ltd. No. 7 Adit	
	Nesbitt-Labine Uranium Mines Ltd.-ABC Mine (Site 2)	Territorial Uranium Mines Ltd.	
	Nesbitt-Labine Uranium Mines Ltd.-Eagle Mine	***Box Mine	
	Nisto Mines Ltd.	Athona Mine	
	Pitch-Ore Uranium Mines Ltd.	**Gunnar Mine	
	Rix-Athabasca Uranium Mines Ltd.-Smitty Mine	**Lorado Uranium Mines Ltd. (Lorado Mill Site)	
	Rix-Athabasca Uranium Mines Ltd.-Zone 62		
	Rix-Athabasca Uranium Mines Ltd.-Leonard Adit		
	***Rix-Athabasca Uranium Mines Ltd.-No. 10 Adit		
	St. Michael Mines Ltd.		
	Strike Uranium Mines Ltd.		
	Uranium Ridge Mines Ltd.		
	Waste Disposal Site #1-Cayzor Area		
	Waste Disposal Site #2-Lorado Mill Area		
La Ronge	Anglo Rouyn Mines Ltd.	Jahala Lake (Lee Lake)	
		La Ronge Uranium Mines Ltd.	
		Pitching Lake	
		Preview Lake Mine	
		Rottenstone Lake Mine	

* The decommissioned Eldorado Nuclear Ltd.-Eagle Mine was assessed as part of the sensitivity analysis for the Year 1 program.

** Assessment consisted of a summary of previously documented conditions. A site inspection was not conducted. Both sites are monitored by Saskatchewan Environment.

*** These sites were assessed in either Year 1 or Year 2 and were re-asssessed in Year 3 as follow-up to the previous assessments.

Table 4.1 - Cont'd
List of Sites Assessed

Region	Sites Assessed		
	Year 1	Year 2	Year 3
Creighton	Western Nuclear Mines Ltd.		Prince Albert Mine
			Laurel Lake North Gold Zone
			Amisk (Beaver) Gold Mines
			Beaver Mine
			Waverly Island Occurrence
			Sonora Deposit
			SYE/Sunset Exploration Shaft
			Star Occurrence
			Amisk Syndicate Mine
			Hannay (Bessie Island) Deposit
			Ace Deposit
			Birch Lake Mine
			Newcor Mine
			Flexar Mine
			Bearcat Showing
			Lucky Strike
			Vista (Bootleg) Mine
			Graham Mine
			Namew Lake Mine (Waste Only)
			Phantom Lake Mine
			Dion Lake North Copper Showing and Shaft
			Henning Maloney Mine
			Coronation Mine
			Wekatch Gold Mines
			CAM Option Copper Showing
			Otonadah Lake Copper Showing and Exploration Shaft
			HBMS Flux Pit

5.0 Field Program

5.1 General

Consistent with Year 1 and Year 2 assessments, Year 3 field activities were completed in two phases. Phase I included examination and assessment of sites in the Uranium City region as part of follow-up recommendations from Year 2 work. Phase II included examination and assessment of sites in the Creighton region.

Prior to the commencement of field activities, research was completed to acquire data on each site. Efforts were made to determine exact location, history, previous inspections and accessibility.

Field work planning involved establishing schedules, arranging for aircraft to access remote sites, and commissioning Mr. James Augier from Uranium City and Mr. Andy Sewap from Denare Beach to assist in inspections by providing guiding services, and vehicles, particularly a boat, to access sites near Uranium City and Creighton, respectively.

Following planning, Clifton Associates personnel flew to Uranium City from Regina, Saskatchewan on 30 September 2002. Site assessments in the Uranium City region were completed during the period 30 September to 02 October 2002. Personnel returned to Regina on 03 October 2002.

For the Creighton sites, Clifton Associates Ltd. personnel drove from Regina to Creighton on 17 October. Site assessments in the Creighton region were completed during the period 18 October to 29 October 2002. Personnel returned to Regina on 30 October 2002.

An early arrival of freeze-up conditions in Creighton meant that access to some sites by boat and float aircraft was not possible. Instead access was achieved by walking a compass traverse through the bush or via local cut snowmobile trails. Snow, 1cm to 11cm thick, covered much of the ground surface at the various sites, thereby obscuring observations for presence of small debris and other details.

During inspections, the following information was gathered:

- Location using Global Positioning System (GPS) coordinates in North American Datum (NAD) 27. See explanation below for NAD and GPS;
- Site description;
- Background gamma readings at uranium sites;
- Gamma readings on uranium site waste which exceeded background gamma level;
- Water samples where water accumulated in raises, adits, trenches or shafts, and field measurements of water samples taken, including pH, temperature and conductivity;
- Site sketch; and,
- Site photograph.

Fieldwork included recording site locations using the ‘Global Positioning System’ (GPS). This method involves using a compact hand held GPS instrument that receives radio signals from satellites orbiting the earth. When the readings have been received, the GPS unit provides an accurate location reading. Readings can be provided in different formats, including geographic (degrees latitude and longitude) or in a format known as ‘Universal Transverse Mercator or ‘UTM’. The UTM system is simply a grid reference system.

The use of topographic maps and the GPS system involves what is termed a ‘datum’. A datum is basically a reference system that is applied to the surface of the earth which allows us to give a location a reference point in degrees or UTM coordinates as described above. There are two types of datums. The NAD 27 is an older version which is currently being phased out because it only had application to North America. The newer version is the NAD 83. NAD 83 has worldwide applications.

All readings from the field were taken using the NAD 27 datum and in UTM coordinates. The SMDI provides locations in UTM and geographic (latitude/longitude) coordinates. All coordinates provided in Section 6.0 are based on measurements taken in the field and from the Saskatchewan Mineral Deposit Index.

5.2 Ranking

Based on the assessments completed in Year 1 - 3, all sites have been ranked based on public safety and environmental risks.

Criteria for ranking is provided in Section 3.0.

Table 5.1 provides the public safety risk assessment summary for Year 3. Table 5.2 provides the environmental risk assessment summary. Table 5.3 provides the combined total of the two risks. Table 5.4 provides the ranking of each site. The ranking is based on total points out of 51 (excluding gamma readings). The sites with the highest values have the highest combined site environmental and public safety risks.

Table 5.5 provides the ranking of each site assessed in Years 1, 2 and 3.

6.0 Results

This section provides a description of each site assessment. Site descriptions are listed in the order that they were inspected from first to last.

Descriptions of geology and exploration history for each site are taken verbatim from the Government of Saskatchewan Department of Industry and Resources Minerals Deposits Index. The SMDI provides a description of the sites based on existing information and provides a comprehensive description of the sites based on information contained in relevant reports such as Beck (1969).

Assessments included a general description of waste rock where present. Waste rock mineralogy was examined along with an assessment of whether or not sulphide minerals were present. Generally abundant sulphide minerals suggests that acid rock drainage may be an issue. The absence of visible sulphide minerals or insignificant amounts of visible sulphide minerals suggest that acid rock drainage is not an issue. However, sulphide minerals may occur in non-visible amounts and may therefore be a concern. Where uncertainty exists regarding acid rock drainage, waste rock samples should be analyzed for acid generating potential.

Table 5.1
Public Safety Risk Assessment Summary

Mine Site	Accessibility 1-4	Mine Closure 0-6	Waste Rock Stability 0-3	Gamma Survey	Buildings Foundations 0-3	Scrap 0-3	Additional Public Safety Risks 0-3	Total (Out of 22)
Ace Deposit	1	2	1	0	0	0	0	4
Amisk Syndicate Mine	2	5.5	2	0	0	1	3 (on shoreline; open adit; recreation site; fall hazard; loose rock)	13.5
Amisk (Beaver) Gold Mines	1	5	1	0	0	1	2 (flooded shaft; fall hazards; nearby summer cabin; potential undiscovered 35m deep adit)	10
Beaver Mine	1	5	1	0	0	0	1.5 (on shoreline; unstable trench edge; loose rock)	8.5
Birch Lake Mine	4	0	1	0	1	1	0	7
Coronation Mine	4	2	2	0	1	2	3 (access to pond; possible shaft-opening instability; fall hazards)	14
Flexar Mine	4	0	1	0	1	3	0	9
Graham Mine	2	5	1.5	0	3	1	3 (nearby snowmobile trail; flooded shaft; deep trench; collapsed mill)	15.5
Hannay (Bessie Island) Deposit	1	5	1	0	0	0	1.5 (on shoreline; fall hazards)	8.5
Henning Maloney Mine	4	0	1.5	0	1	1	1 (trenches adjacent to snowmobile trail)	8.5
Lucky Strike Mine	1	5	1	0	0	0	1.5 (flooded shaft; unstable shaft edge)	8.5
Phantom Lake Mine	3	4.5	1	0	0	0	1.5 (nearby snowmobile trail; potential undiscovered 12m deep shaft)	10
Namew Lake	n/a	n/a	n/a	n/a	n/a	n/a	n/a (water sampling location only)	n/a
Neely Lake	1	5	1	0	0	1		8
Newcor Mine	4	0	1	0	2.5	3	2 (public access across site; trenches adjacent to road; fall & debris hazards)	12.5
Prince Albert Mine	1	5	3	0	2	3	2 (open shaft near shore; fall-in hazards; unstable stope)	16
Sonora Deposit	1	5	0	0	2	1	1.5 (on shoreline; unstable trench edge)	10.5
Star Occurrence	1	5	0	0	0	0	0	6
Vista (Bootleg) Mine	4	2	2	0	1	1	1 (public access; fall hazards)	11
Waverly Island Occurrence	1	5.5	1	0	0	0	1.5 (deep obscured trenches near shore; unstable trench edge)	9
Wekatch Gold Mine	1	5	2	0	0	0	2 (open shaft near shore & known site; fall-in hazard)	10
Dion Lake Copper Showing and Shaft	3	5	2	0	0	1	2 (nearby snowmobile/ATV trail; flooded shaft; fall hazard)	13
SYE / Sunset Exploration Shaft	1	5	1	0	2	1	0	10
Bearcat Showing and Prospect Shaft	1	5.5	2	0	0	0	1.5 (open shaft near shore; fall-in hazard)	10
Otonadah Lake Cu Showing and Exploration Shaft	1	5	0	0	0	0	1 (possible deep trenches)	7
CAM Option Cu Showing	1	5	2	0	0	0	1 (proximity to public recreation site)	9
Laurel Lake North Gold Zone	1	3	1.5	0	0	2	3 (obvious trail to site, opening into decline; fuel storage tank)	10.5
HBMS Flux Pit	2.5	0	0	0	0	1	0	3.5

Notes:
(1) The average gamma levels at Gunnar and Lorado were not measured and have been assumed based on available information.
(2) The Gunnar and Lorado sites were not inspected during the 2002 field work. Assessments presented are based on existing information and knowledge of the site conditions.
(3) The Otonadah Lake Cu Showing site was not ground inspected during the 2002 field work. Assessment presented is based on an aerial overflight observations and existing published information.

Table 5.2
Environmental Risk Assessment Summary

Mine Site	Accumulated Water 0-3	Liquid Discharges 0-3	Waste Rock Character 1-3	Waste Rock Location 0-3	Tailings Character 1-5	Tailings Location re: Environment 0-3	Scrap Material 0-3	Risks to Wildlife 0-3	Additional Environmental Risks 0-3	Total (Out of 29)
Ace Deposit	0	0	1	0	0	0	0	0	0	1
Amisk Syndicate Mine	2	0	2	2	0	0	0	1	2.5 (standing water in adits; sulphide odour in water; potential seepage into lake)	9.5
Amisk (Beaver) Gold Mines	2	0	2	2	0	0	0	2	1 (flooded shaft; possible hydraulic connection)	9
Beaver Mine	1	1	3	2	0	0	0	1	0	8
Birch Lake Mine	0	0	1	2	0	0	0	0	1 (potential placement of waste rock into lake)	4
Coronation Mine	3	1	1.5	3	2	3	0	3	3 (abundant waste rock; possible hydraulic connection; potential tailings)	19.5
Flexar Mine	0	0	2.5	2	0	0	2	0	2 (abundant waste rock; drainage rill into lake)	8.5
Graham Mine	2	0	1	0	0	0	0	2	1 (potential tailings)	6
Hannay (Bessie Island) Deposit	1	0	1.5	1	0	0	0	1	1 (hydraulic connection to lake)	5.5
Henning Maloney Mine	0	0	1	0	0	0	0	0	1 (surface runoff into wet lowland)	2
Lucky Strike Mine	1	0	1	0	0	0	0	1	0	3
Phantom Lake Mine	1	0	1	0	0	0	0	0	0	2
Namew Lake	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a (water sampling location only)	n/a
Neely Lake	0	0	1	1	0	0	1	1		4
Newcor Mine	0	0	1	3	0	0	0	0	2 (waste rock in lake; drainage into lake)	7
Prince Albert Mine	3	0	1	3	0	0	0	3	1 (potential waste rock & tailings in lake)	11
Sonora Deposit	0	0	2	1	0	0	0	0	0	3
Star Occurrence	0	0	1	0	0	0	0	0	0	1
Vista (Bootleg) Mine	1	0	0	3	0	0	0	0	1 (abundant waste rock)	5
Waverly Island Occurrence	1	0	2	1	0	0	0	1	1.5 (possible hydraulic connection; sulphide odour in water)	6.5

Table 5.2 - Cont'd
Environmental Risk Assessment Summary

Mine Site	Accumulated Water 0-3	Liquid Discharges 0-3	Waste Rock Character 1-3	Waste Rock Location 0-3	Tailings Character 1-5	Tailings Location re: Environment 0-3	Scrap Material 0-3	Risks to Wildlife 0-3	Additional Environmental Risks 0-3	Total (Out of 29)
Wekatch Gold Mine	1	0	1	1	0	0	0	1	0	4
Dion Lake Copper Showing and Shaft	2	0	1	0	0	0	0	2	0	5
SYE / Sunset Exploration Shaft	0	0	1.5	0	0	0	0	0	0	1.5
Bearcat Showing and Prospect Shaft	1	1	3	2	0	0	0	1	2 (standing water in shaft; potential seepage into lake)	10
Otonadah Lake Cu Showing and Exploration Shaft	0	0	0	0	0	0	0	1	0	1
CAM Option Cu Showing	1	0	2.5	0	0	0	0	0	0	3.5
Laurel Lake North Gold Zone	0	0	2	3	0	0	2	0	1 (abundant waste rock in muskeg)	8
HBMS Flux Pit	3	0	0	0	0	0	0	0	1 (possible buried drag-line)	4

Table 5.3
Combined Risk Assessment Score

Mine Site	Public Safety Score	Environmental Score	Total Score (out of 51)
Ace Deposit	4	1	5
Amisk (Beaver) Gold Mines	10	9	19
Amisk Syndicate Mine	13.5	9.5	23
Bearcat Showing and Prospect Shaft	10	10	20
Beaver Mine	8.5	8	16.5
Birch Lake Mine	7	4	11
CAM Option Cu Showing	9	3.5	12.5
Coronation Mine	14	19.5	33.5
Dion Lake Copper Showing and Shaft	13	5	18
Flexar Mine	9	8.5	17.5
Graham Mine	15.5	6	21.5
Hannay (Bessie Island) Deposit	8.5	5.5	14
HBMS Flux Pit	3.5	4	7.5
Henning Maloney Mine	8.5	2	10.5
Laurel Lake North Gold Zone	10.5	8	18.5
Lucky Strike Mine	8.5	3	11.5
Namew Lake	N/A	N/A	N/A
Neely Lake	8	4	12
Newcor Mine	12.5	7	19.5
Otonadah Lake Cu Showing and Exploration Shaft	7	1	8
Phantom Lake Mine	10	2	12
Prince Albert Mine	16	11	27
Sonora Deposit	10.5	3	13.5
Star Occurrence	6	1	7
SYE / Sunset Exploration Shaft	10	1.5	11.5
Vista (Bootleg) Mine	11	5	16
Waverly Island Occurrence	9	6.5	15.5
Wekatch Gold Mines	10	4	14

Table 5.4
Assessment Ranking

Ranking	Mine Site	Total (out of 51)
1/26	Coronation Mine	33.5
2/26	Prince Albert Mine	27
3/26	Amisk Syndicate Mine	23
4/26	Graham Mine	21.5
5/26	Bearcat Showing and Prospect Shaft	20
6/26	Newcor Mine	19.5
7/26	Amisk (Beaver) Gold Mines	19
8/26	Laurel Lake North Gold Zone	18.5
9/26	Dion Lake Copper Showing and Shaft	18
10/26	Flexar Mine	17.5
11/26	Beaver Mine	16.5
12/26	Vista (Bootleg) Mine	16
13/26	Waverly Island Occurrence	15.5
14/26	Hannay (Bessie Island) Deposit	14
15/26	Wekatch Gold Mines	14
16/26	Sonora Deposit	13.5
17/26	CAM Option Cu Showing	12.5
18/26	Phantom Lake Mine	12
19/26	Neely Lake	12
20/26	Lucky Strike Mine	11.5
21/26	SYE / Sunset Exploration Shaft	11.5
22/26	Birch Lake Mine	11
23/26	Henning Maloney Mine	10.5
24/26	Otonadah Lake Cu Showing and Exploration Shaft	8
25/26	Star Occurrence	7
26/26	Ace Deposit	5
	Namew Lake	N/A
	HBMS Flux Pit	7.5

Table 5.5
Year 1 - 3 Combined Scores

Ranking	Site	Year Assessed	Total
1	Gunnar	2	50.5
2	Box	2/3	37
3	Rottenstone	2	36.5
4	Anglo-Rouyn	1	35.1
5	Coronation Mine	3	33.5
6	Gulch	2	31
7	Lorado Mill Site	2	29
8	Prince Albert Mine	3	27
9	Western Nuclear	1	28.1
10	Baska	2	25.5
11	Lake Cinch/Cenex	1/3	25
12	Nesbitt-Labine-Eagle Mine	1	24.5
13	Consolidated Nicholson	2	23.5
14	Amisk Syndicate Mine	3	23 (Tie)
15	Waste Disposal Area 2	1	23 (Tie)
16	Consolidated	1	22.5
17	Graham Mine	3	21.5
18	Nesbitt	2	21.1
19	Bearcat Showing and Prospect Shaft	3	20
20	Newcor Mine	3	19.5 (Tie)
21	Nesbitt-Labine-ABC Mine	1	19.4
22	Amisk (Beaver) Gold Mines	3	19 (Tie)
23	Cayzor	1	19 (Tie)
24	Laurel Lake North Gold Zone	3	18.5
25	Dion Lake Copper Showing and Shaft	3	18
26	Flexar Mine	3	17.5 (Tie)
27	Uranium Ridge	1	17.5 (Tie)
28	La Ronge	2	17.45
29	Pitch-Ore	1	17.2
30	Black Bay	1	17
31	Rix-Athabasca, Zone 62	1	16.7
32	Beaver Mine	3	16.5 (Tie)
33	Rix-Athabasca-Smitty Mine	1	16.5 (Tie)
34	Meta	1	16.4
35	Rix-Athabasca-Leonard Mine	1	16.3
36	New Mylamaque	2/3	16.1
37	Vista (Bootleg) Mine	3	16
38	Lorado Mine Site	1	15.6
39	Waverly Island	3	15.5 (Tie)
40	Preview Lake	2	15.5 (Tie)
41	St. Michaels	1	15.3
42	Caba	2	15.1
43	Don Henry	2/3	15
44	National Exploration-Keiller Adit	1	14.7
45	Territorial	2	14.15
46	Wekatch Gold Mines	3	14 (Tie)
47	Hannay (Bessie Island) Deposit	3	14 (Tie)
48	Beaverlodge-Mickey Lake	2	13.9
49	Sonora Deposit	3	13.5 (Tie)
50	Pitching Lake	2	13.5 (Tie)
51	National Exploration-Pat Claims	1	13 (Tie)
52	Athona	2	13 (Tie)

Table 5.5 - Cont'd
Year 1 - 3 Combined Scores

Ranking	Site	Year Assessed	Total
53	CAM Option copper Showing	3	12.5
54	Amax Athabasca (Site 1)	1	12.4
55	Phantom Lake Mine	3	12 (Tie)
56	Neely Lake Mine Site	3	12 (Tie)
57	Homer Yellowknife	2	11.6
58	SYE/Sunset Exploration Shaft	3	11.5 (Tie)
59	Lucky Strike Mine	3	11.5 (Tie)
60	Birch Lake Mine	3	11
61	Jahala	2	10.5 (Tie)
62	Consolidated Beta Gamma	2	10.5 (Tie)
63	Henning Maloney Mine	3	10.5 (Tie)
64	Waste Disposal Area 1	1	10.4
65	Jesko	2	9.5
66	Nisto Mines Ltd.	1	9.4
67	Rix Athabasca, No. 10 Adit	1	8.4
68	Otonadah Lake Copper Showing and Exploration Shaft	3	8
69	Eldorado, Eagle Mine	1	7.9
70	Star Occurrence	3	7
71	Strike Lake	1	6.5
72	Amax Athabasca (Site No. 2)	1	6.3
73	Ace Deposit	3	5
74	Pitch-Ore	2	4.2
75	Amax Athabasca (Site No.3)	1/3	4
	HBMS Flux Pit	1/3	Not Ranked - Sand Pit
	Rix Athabasca	2	Not Available-Not Located
	Namew Lake	3	Site Decommissioned - Water Sample Only

6.1 Neely Lake Site

6.1.1 Location and Access

Site Inspection: 30 September 2002

Location: 72 N/9 NW
UTM Zone: 12

NAD 83		NAD 27
Geographic**	UTM**	UTM*
59° 39' 45" Lat 108° 29' 33" Long	6616494 0641263	661628 m N 0641427 m E

* Location recorded by GPS during Year 3 field program.
** Location obtained from Saskatchewan Industry and Resources Mineral Deposit Index.

The site location is shown in Figure 6.1-1. The site plan is shown in Figure 6.1-2. Photograph Nos. 6.1-1 to 6.1-3 show the site.

6.1.2 Property Information and Ownership

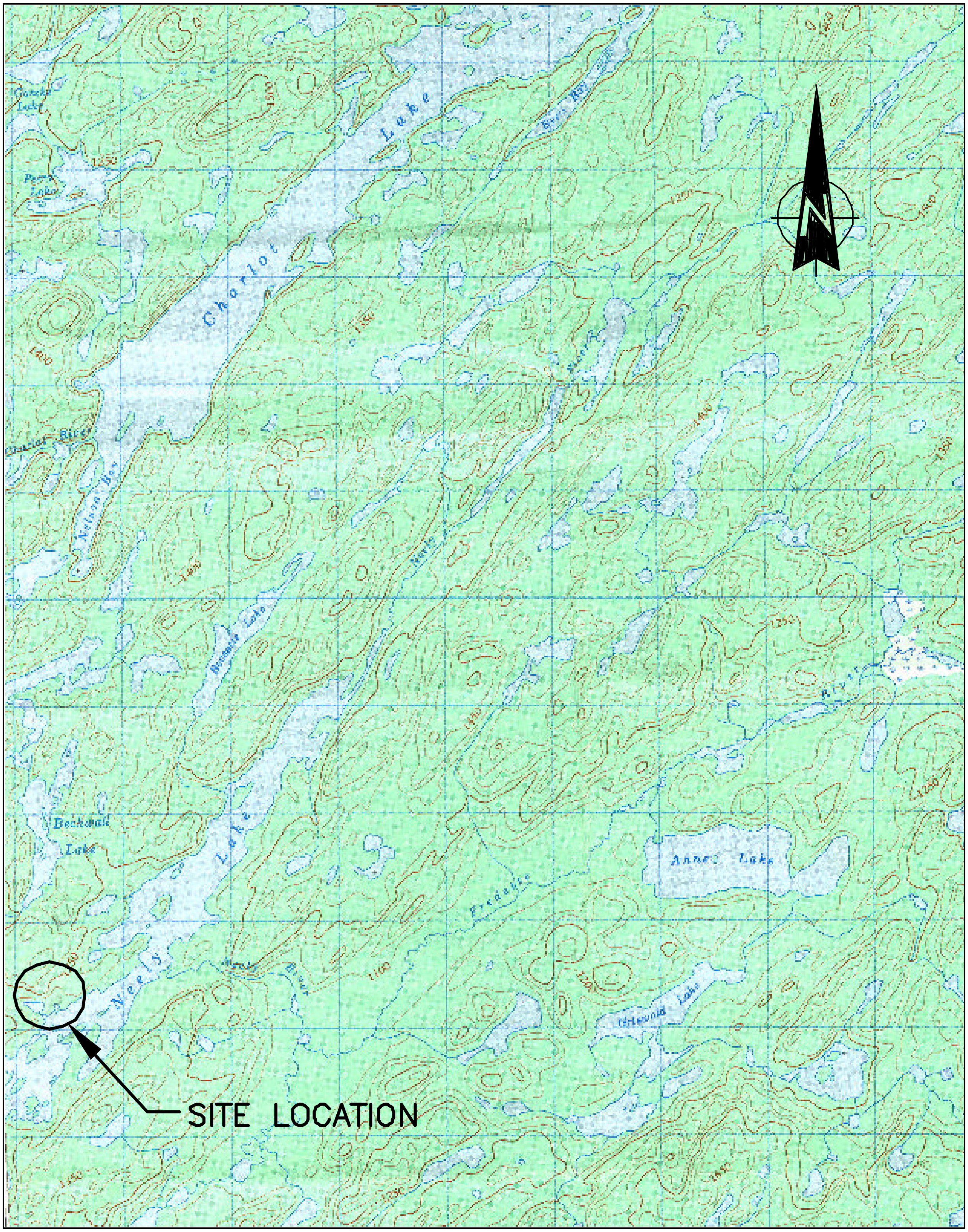
Saskatchewan Mineral Deposit Index Number: 1281
Property: (formerly: Numal Oil and Gas Permits No. 1 and 7; EEI Concession)
Location: Neely Lake – east of
Owner(s): See Section 6-1-4 for previous owners.
Commodity: Adit or Shaft **Associated Commodities:** GF
Deposit Type:

6.1.3 Geology

The showing is located approximately 0.5 miles (0.8 km) northeast of the southwest end of Neely Lake, on the northwest shore of Neely Lake.

The area of the showing is underlain by a gneissic granite containing large inclusions of quartzite.

The gold occurs in quartz veinlets and stringers which cut the heavily fractured gnessic granite. The gold content is not known. Accessory minerals are pyrite and graphite occurring in near by fractures. The dump, the shaft, and nearby trenches were examined; no radioactive minerals were noted, although the yellow staining is probably related to uraninite or some other original constituent of the country rock.

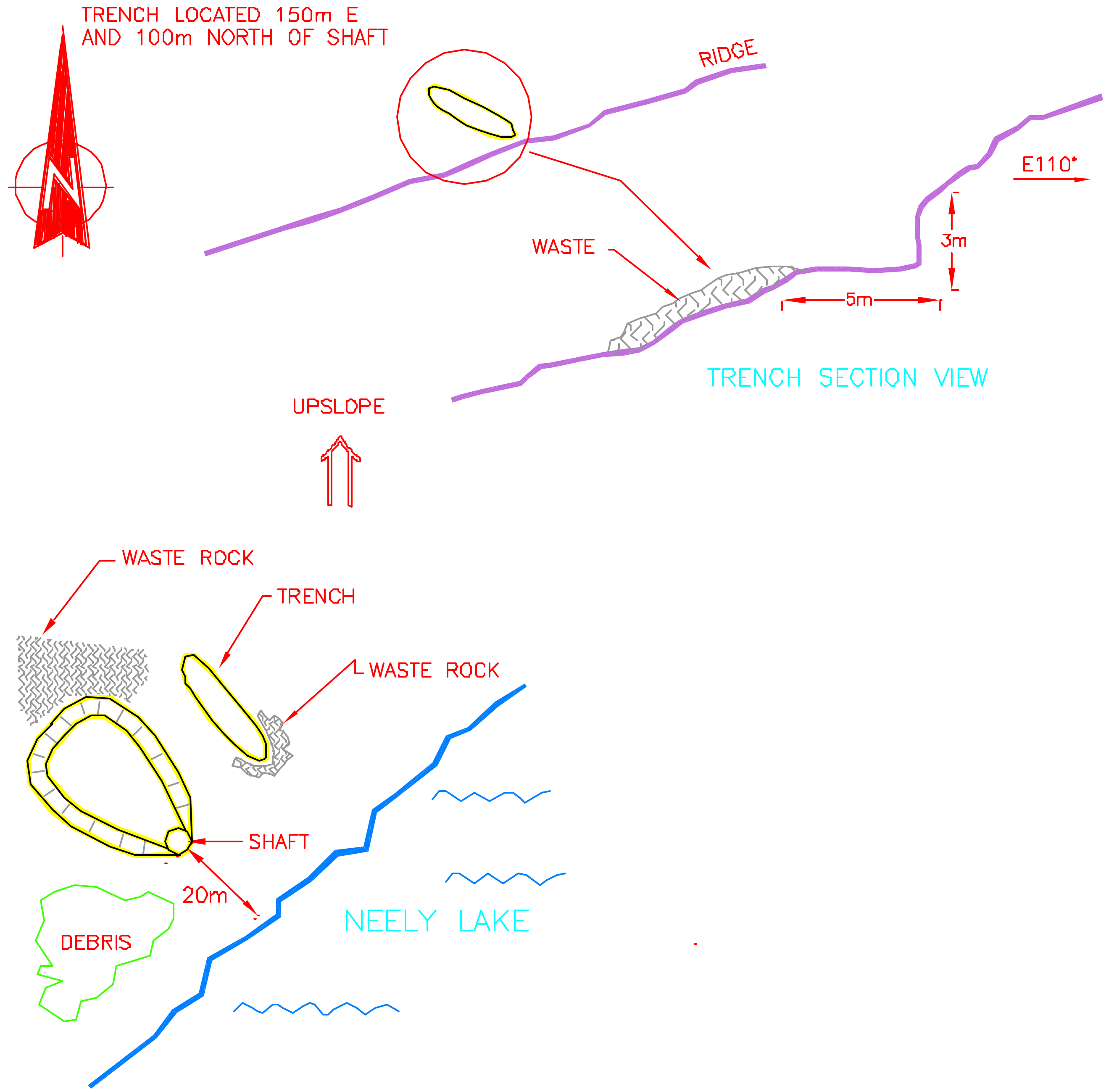


NOTE:

DRAWING DEVELOPED FROM
SCANNED NTS 74 N/9.

SITE LOCATION PLAN
NEELY LAKE MINE

CLIFTON ASSOCIATES LTD. | PROJECT NO: R3278 | FIGURE NO: 6.1-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

NEELY LAKE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.1–2

6.1.4 Exploration History

The showing was first located by Borealis Syndicate in 1936. A small prospect shaft of unknown depth was sunk.

In 1950, the EEI Concession was leased to and prospect and mapped by Goldfields Uranium Co. Ltd., who located 34 occurrences on the northwest end of Elder Lake and a part of Neely Lake which is under the EEI Concession (AF 74N10-0190). A few of these radioactive spots were marked by yellow stain.

In 1953 to 1954, Gwillim Lake Gold Mines Ltd. did some prospecting and diamond drilling on their Bert claims which partly covered the area.

In 1966 to 1968, Numac Oil and Gas Ltd. did airborne and ground radiometric surveys over their Permit No. 1 and 7 adjoining claims, under which is gold showing occurred.

In 1987, a SMDC-AGIP Resources Ltd. - Silverside Resources Ltd. joint venture completed a regional prospecting and lithogeochemical survey south of the showing area (AF 74N09-0297). At the same time, the showing was examined and 14 grab samples were taken from the trench and the mine dumps.

6.1.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.1.5.1 General

The Neely Lake site was inspected on 30 September 2002. The site was accessed by float plane landing on the shore of Neely Lake. The site is located on the north shore of the Lake but at the southern end. There was no evidence of recent institution to the site. The site is located near the shore of the Lake and is easily identified from the air. Although records indicate the site is east of Neely Lake, it is in front on the west side. A small dilapidated tin shack is located on the east side across the Lake from the mine site. This shack may have at one time been recorded as the mine site.

6.1.5.2 Mine Workings

Mine workings consist of a single adit near the shore of Neely Lake and a deep trench about 100 m east and 150 m north of the shaft. The shaft is located about 20 km in from the shoreline at 6616228 m north and 0641427 m east. The trench is located at 6616386 m north and 0641520 m east of the shaft.

The shaft opening is circular and about 5 m in diameter. There is water in the shaft at a level of about 10 m from the surface. The shaft water level appears to correspond to the water level of Neely Lake.

Northeast of the shaft is a deep trench cut into a hillside. The trench faces a step 3 – 5 m drop exists from the hill-side to the bottom of the trench (Figure 6.1-2). The trench is about 10.15 m long and 3 m wide.

6.1.5.3 Waste Rock

A small amount (30 – 50 m^3) of waste is spread around its shaft opening. The waste rock is granitic in nature and rich in quartz. There was no visible signs of sulphide minerals or acid generation associated with the waste rock.

Approximately 100 m^3 of waste rock is located near the trench northeast of the shaft. As with the shaft waste rock, there were no visible sulphides or evidence of acid generation.

6.1.5.4 Debris

There is a small amount of debris scattered around the shaft area. Debris includes drill stem, lumber, pipes and wooden cribbing.

6.1.6 History of Previous Inspections

There is no record of previous inspections.

6.1.7 Risk Assessment Ranking

Public Safety Assessment	8
Environmental Assessment	4
Combined Total Assessment	12
Ranking	19/26

Although the site is in a remote location, the open shaft is a public safety hazard. The public safety assessment ranking therefore includes one point under the “additional public safety risks” category.

6.1.8 Recommended Follow-up

Follow-up work should include blasting the shaft closed or covering it with a secure concrete cap. Debris could be pushed into the shaft prior to sealing. Waste rock near the trench northeast of the shaft should be pushed into the trench to remove the fall hazard associated with the trench fall.

Photograph 6.1-1. Neely Lake-Shaft-September 30, 2002

Photograph 6.1-2. Neely Lake-Trench and Waste Rock-September 30, 2002.

Photograph 6.1-3. Neely Lake-Trench-September 30, 2002.

6.2 New Mylamaque Uranium Mines-Portal (Repeat Inspection)

6.2.1 Location and Access

Site Inspection: 30 September 2002

Location: NTS Mapsheet 74N-14
UTM Zone: 12

6.2.2 2002 Inspection – Site Description

The new Mylamaque site was inspected in 2001. A complete description of the site is provided in the Year 2 report. An adit was known to be associated with the property, but could not be located during the Year 2 inspection. The adit was subsequently located during this years program. The following description applies to the adit only.

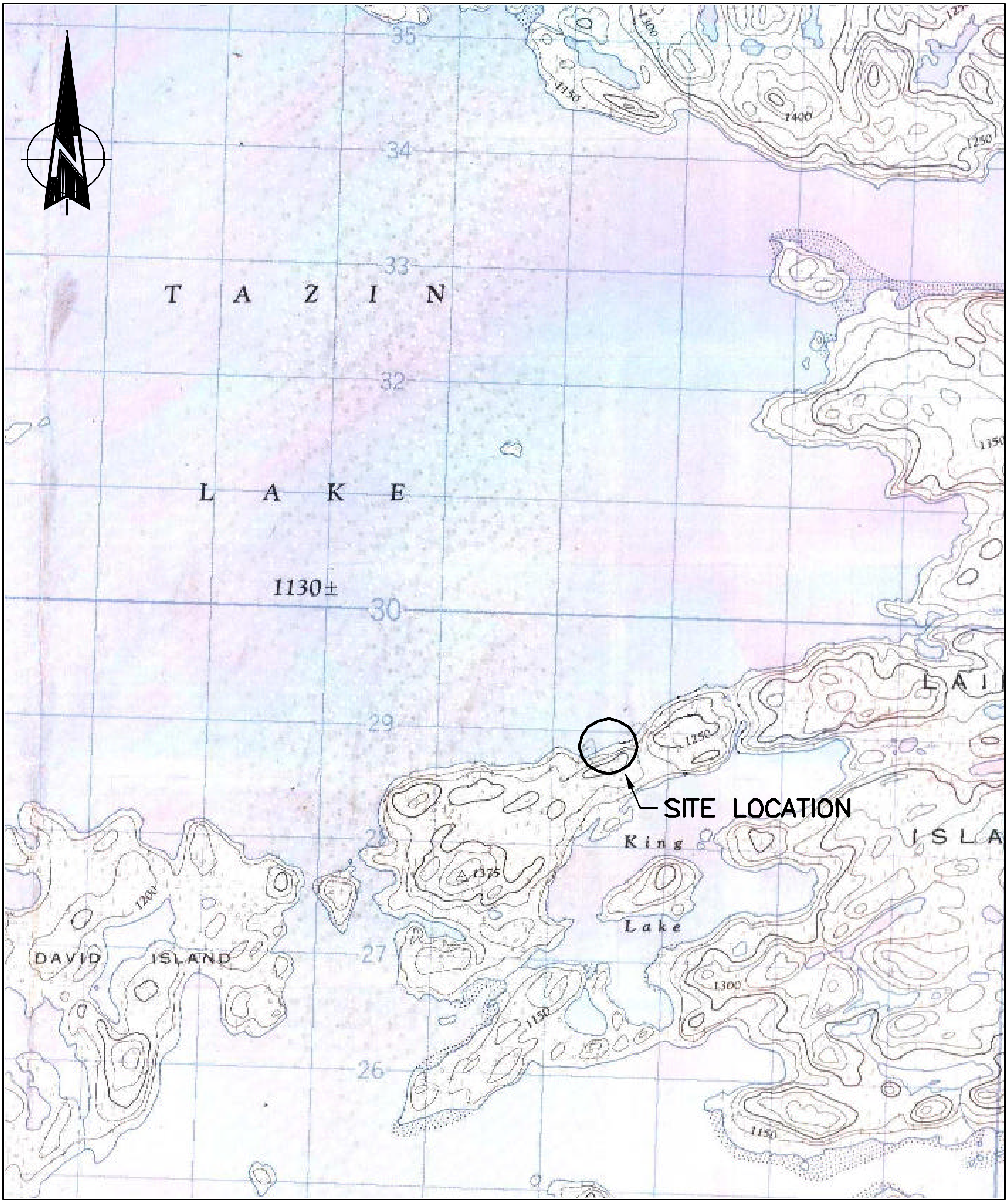
6.2.2.1 Inspection

The adit is located on the northwest shore of Laind Island (Figure 6.2-1). The adit is located about 500 m north of the abandoned camp (Figure 6.2-2). Photograph Nos. 6.2-1 and 6.2-2 show the site.

Background gamma readings in the area of the adit were 0.06 μSv/hr.

The adit was open with about 20 m^3 of waste rock spread out toward Tazin Lake. There was no waste rock in the Lake. The waste rock did not have any visible sulphides or evidence of acid generation.

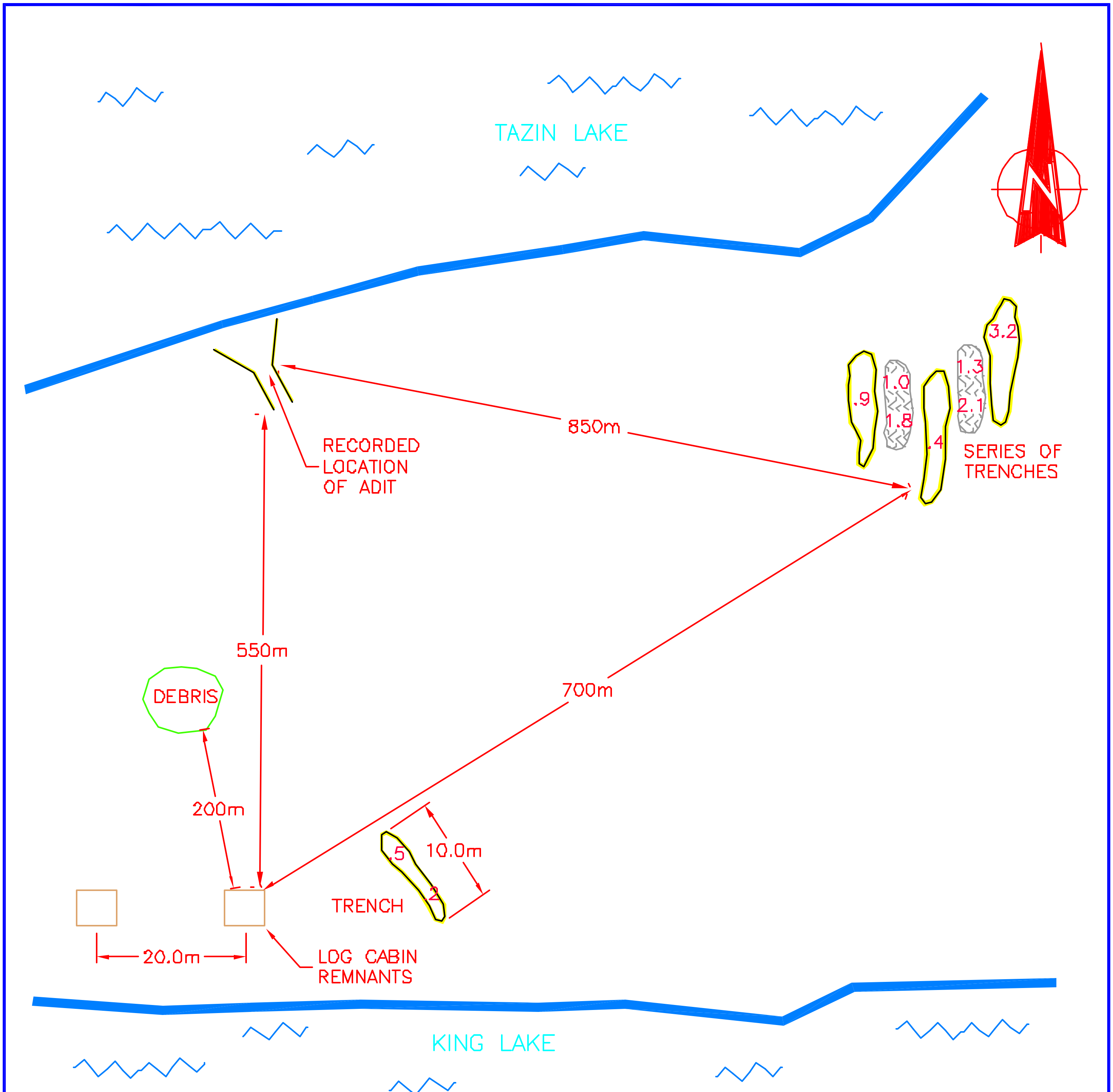
As part of the Year 2 assessment, certain assumptions were made regarding the adit in an attempt to provide a complete site assessment. It was assumed the adit was open with some stability problems, a small amount of water (intermittent) and waste rock located close to Tazin Lake. Based on the inspection of the adit, these assumptions were accurate. The ranking for the site will therefore remain unchanged from Year 2.



NOTE:
DRAWING DEVEOLPED FROM
SCANNED NTS MAP 74 N 14.

SITE LOCATION PLAN
NEW MYLAMAQUE URANIUM MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.2-1



LEGEND:

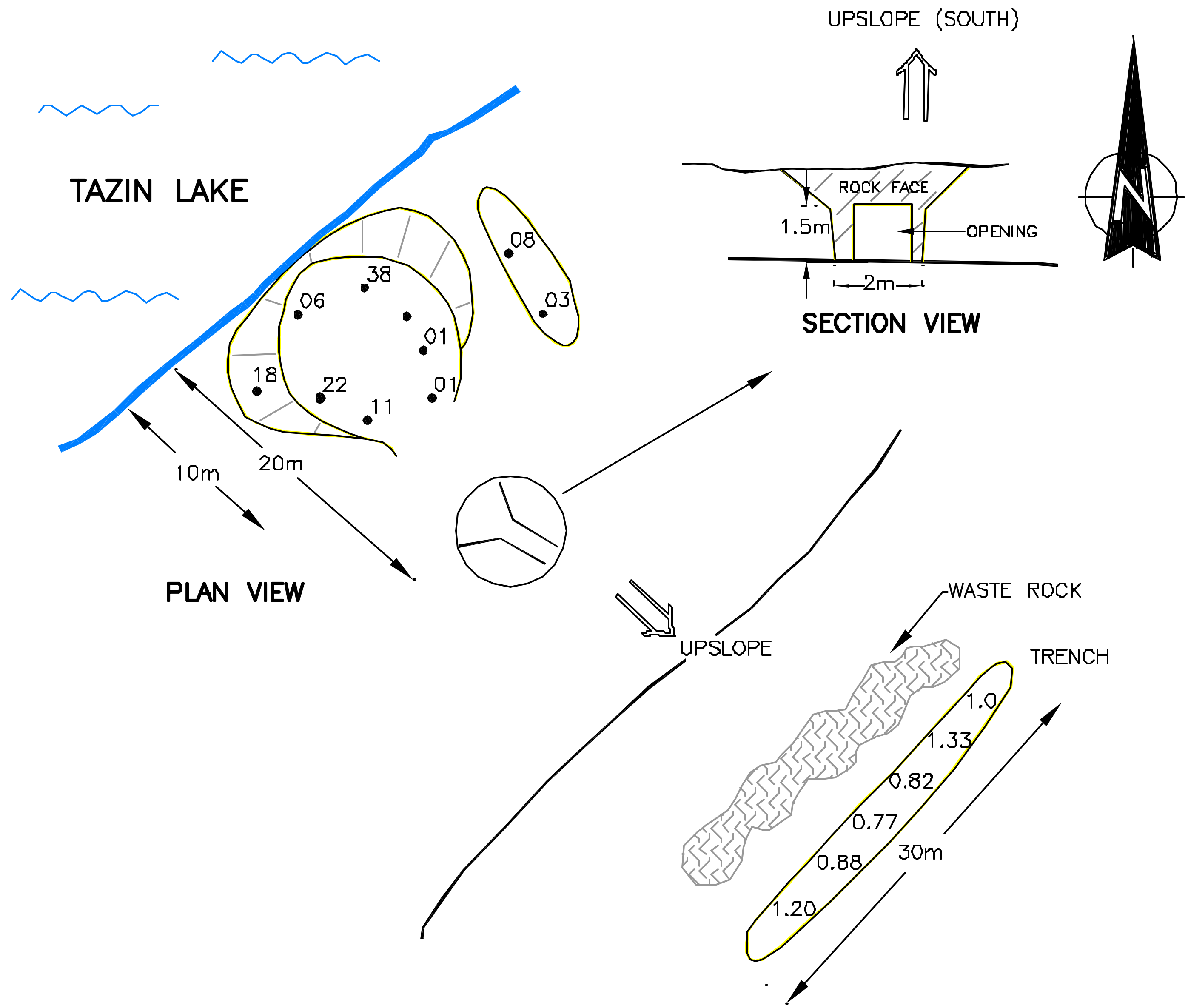
Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

NEW MYLAMAQUE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.2–2



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

NEW MYLAMAQUE – ADIT SITE
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.2-3**

The adit opening is about 2 m wide by 1.5 m high. There is a steep drop from the hillside down to the adit. A small amount of debris is spread about the site.

About 300 m southwest of the adit is a large trench about 30 m long and 5 m wide. Associated with the trench is about 100 m^3 of waste rock. The gamma readings for the trench varied from .77 to 1.20 μSv/hr. There are no immediate hazards associated with the trench.

6.2.2.2 Follow-up Work

Follow-up work should include pushing debris into the adit and blasting it shut or sealing the adit with a secure metal or concrete cover.

Photograph 6.2-1. New Mylamaque Site-Portal-September 30, 2002

Photograph 6.2-2. New Mylamaque Site-Waste Rock Extending to Shore of Tazin Lake-September 30, 2002

6.3 Rix Athabasca- (Trench) (Repeat Inspection)

6.3.1 Location and Access

Site Inspection: 01 October 2002

Location:	NTS Mapsheet 74N-10-SE
UTM Zone:	12
UTM:	6604102 m N
(NAD27)	0631410 m E

6.3.2 2003 Inspection

The Amax Athabasca Uranium Mines Ltd. (Site No. 57) site was assessed in 2000 and is described in the Year 1 report.

A trench associated with the property was not located during the assessment. Subsequently, the trench was located in 2002 with the assistance of Mr. George Bihun, Conservation Officer with Saskatchewan Environment.

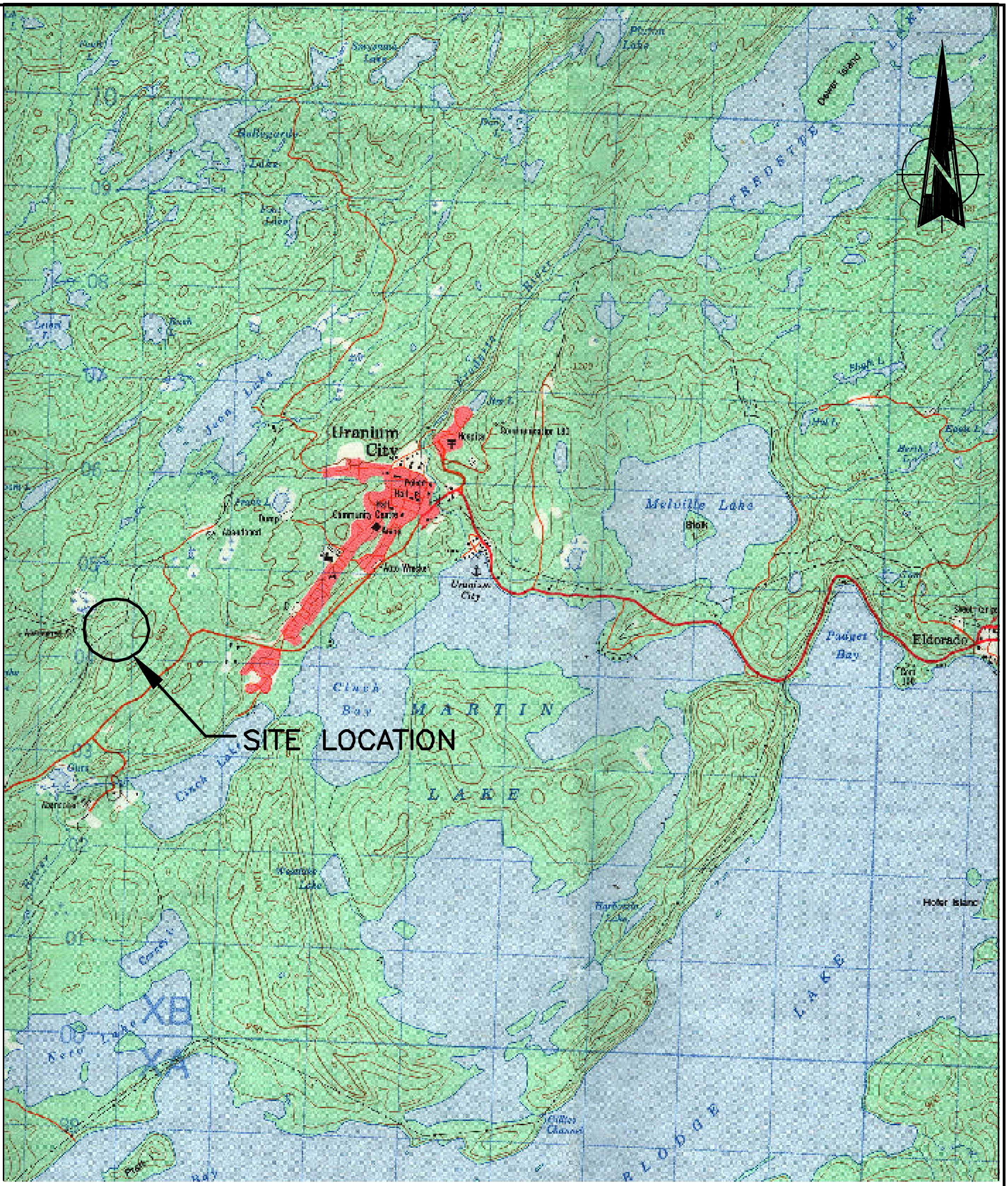
The trench is located about 160 m east of the fork in the access road. Finding the trench is likely easiest by traversing in 160 m east from its fork.

The site location is shown in Figure 6.3-1. The site (trench area) plan is shown in Figure 6.3-2. Photograph Nos. 6.3-1 to 6.3-3 show the site.

Background gamma values in the area of the trench are about 0.15 µSv/hr. The trench is about 5 m long and 3 m wide with steep vertical sides. The trench is about 30 m deep. About 100 m^3 of waste rock is spread around the site, including barrels and scrap metal.

Gamma values for the waste rock varied from 1.44 to 3.65 µSv/hr.

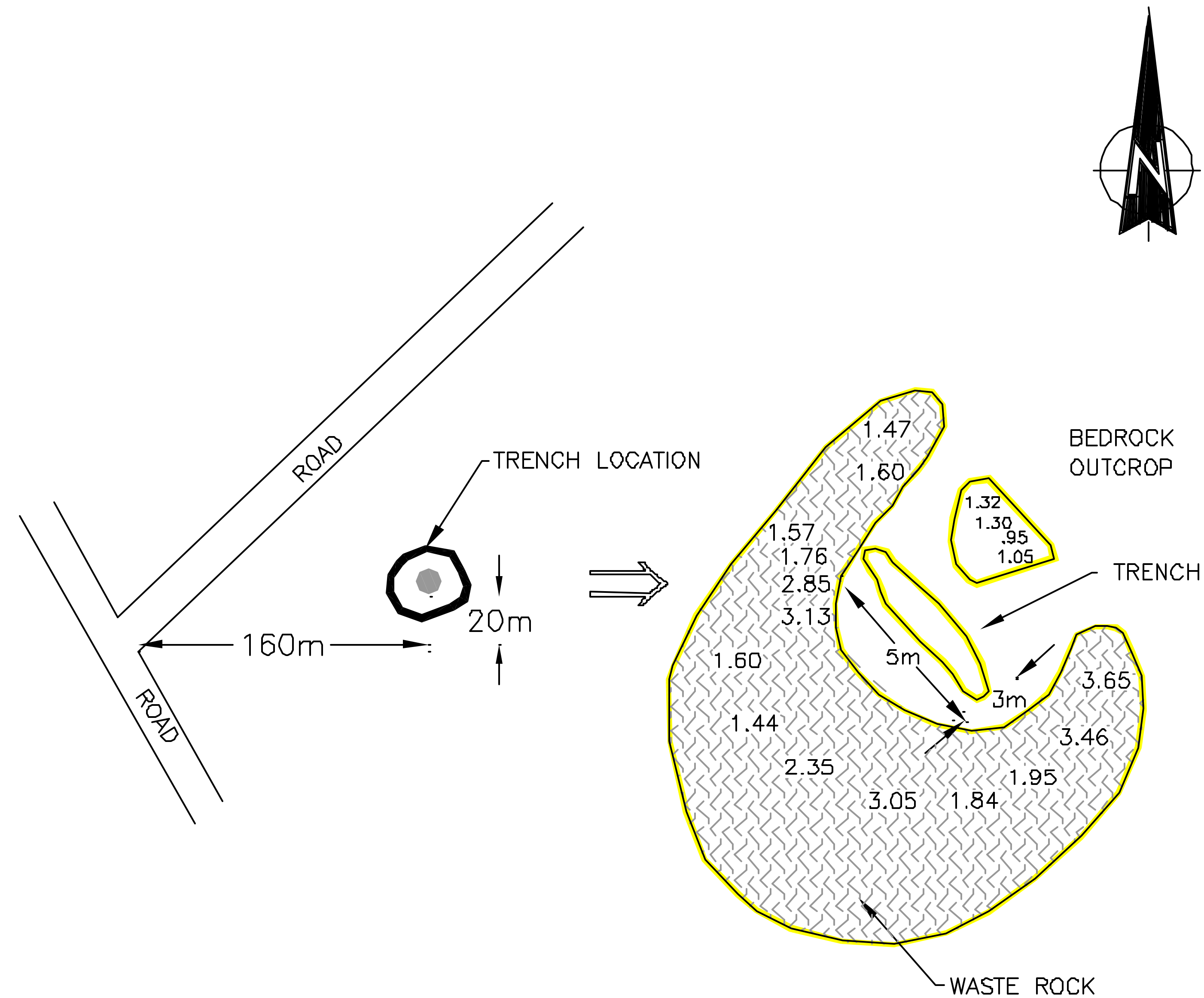
Given the presence of the trench and debris, the ranking of the site changes from a combined score of 4 to 10.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS 74 N/10.

SITE LOCATION PLAN
RIX ATHABASCA MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.3–1



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (μSv/hr.)	0.25
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

AMAX ATHABASCA – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.3–2**

6.3.3 Follow-up Work

Follow-up work should focus on pushing waste rock and debris back into the trench to remove the public safety hazard and to reduce the gamma exposure present by the waste rock.

Photograph 6.3-1. Rix Athabasca Site-Open Trench-October 01, 2002

Photograph 6.3-2. Rix Athabasca Site-Open Trench-October 01, 2002

Photograph 6.3-3. Rix Athabasca Site-Debris-October 01, 2002.

6.4 Cenex-Shaft (Repeat Inspection)

6.4.1 Location and Access

Site Inspection: 01 October 2002

Location:	NTS Mapsheet 74N-10-SE
UTM Zone:	12
UTM:	6602505 m N
(NAD27)	0631425 m E

The Cenex site was inspected during the Year 1 program. There are three shafts and a decline associated with the site. The decline was sealed with rock in the early 1990's and remains secure.

Shaft No. 3 which is located about 360 m west and 200 m south of the bridge, is showing signs of slumping. This shaft has a steel plate on top of the opening with some waste rock crossing the edges of the plate. There is a pronounced opening on one side which leads directly into the shaft opening.

Shaft No. 2 is slightly south of the bridge. This shaft is also opening and presents a public safety hazard.

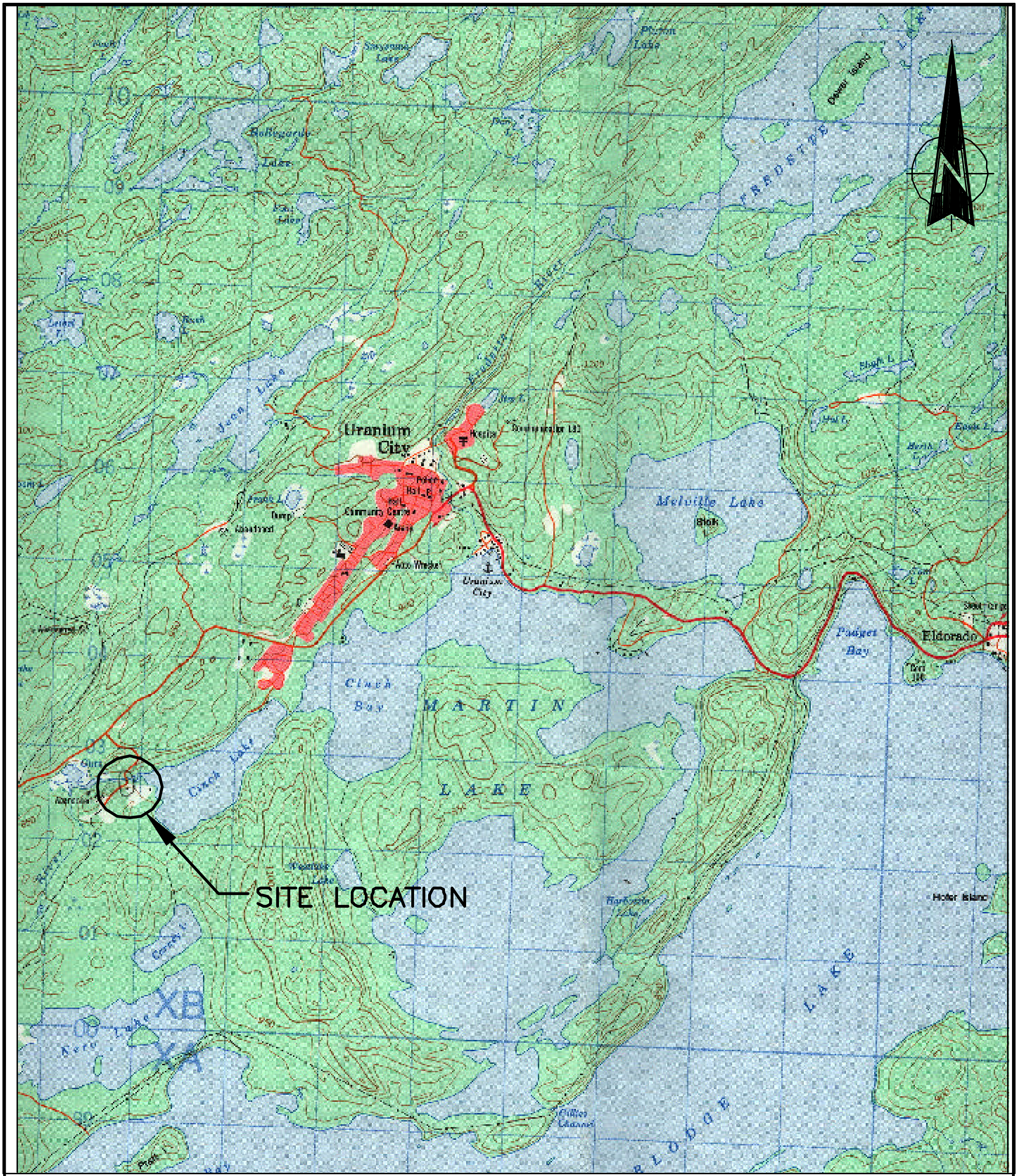
Shaft No. 1 is east of shaft No. 2 and is also showing signs of slumping.

Figure 6.4-1 shows the site location. Figure 6.4.2 shows the site plan and location of the shafts. Photographs Nos. 6.4-1 to 6.4-2 show the site.

6.4.3 Follow-up work

Given the easy access to the site, work should focus on securing the shaft openings. This could be done by excavating existing material away and attracting secure concrete shaft covers on all these shaft openings

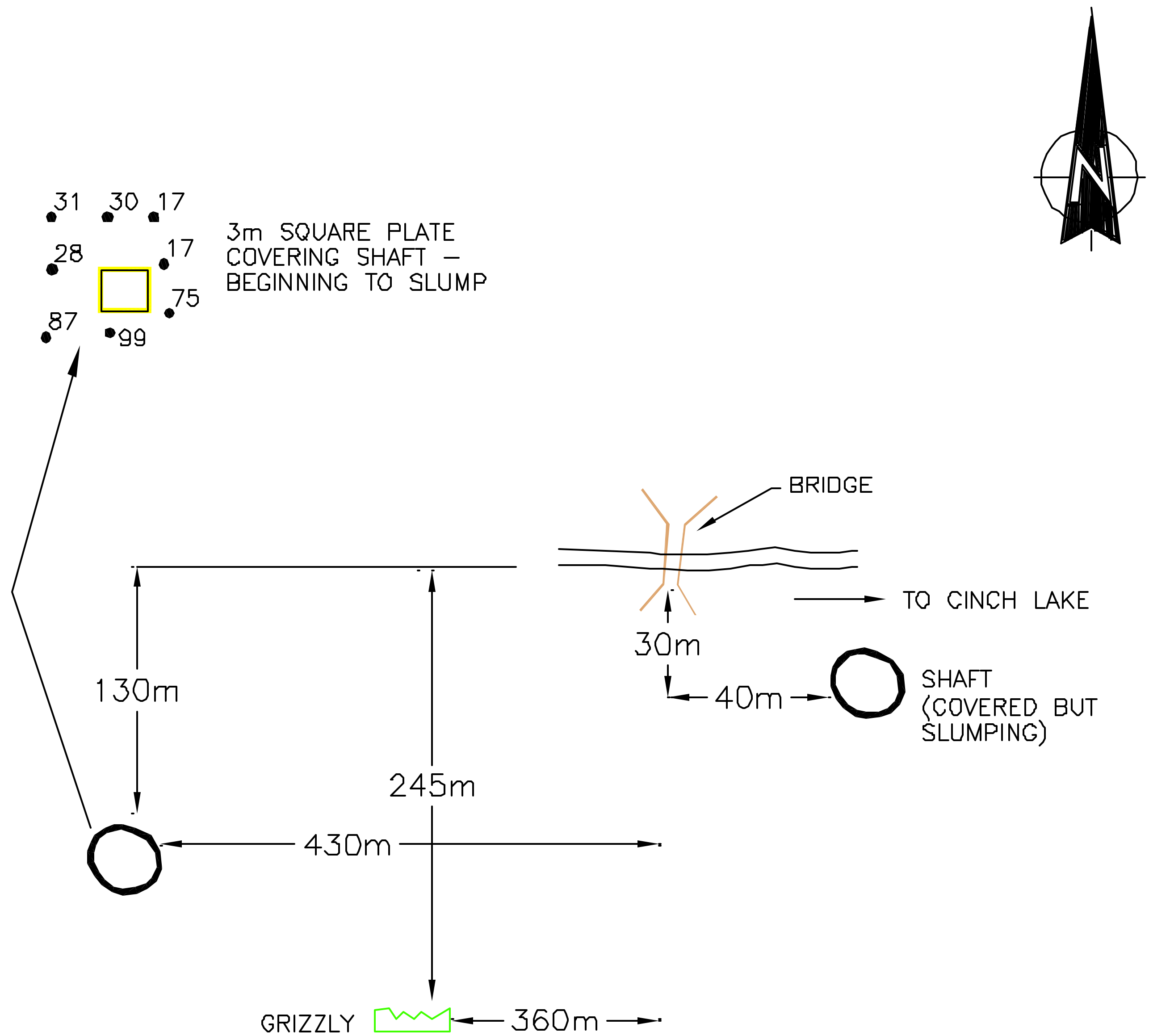
The ranking for the site remains unchanged for the ranking attributed to it from the Year 1 assessment.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS 74 N/10.

SITE LOCATION PLAN
CENEX MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.4-1



LEGEND:

- Roads/Trails
- Mine Workings
- Waste Rock
- Body of Water
- Scrap Material/Debris/Refuse
- Building/Foundation
- Tailings
- Natural Ground Surface
- Gamma Readings (µSv/hr.) 0.25
- Water Sample Location
- Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

CENEX MINE AREA – SITE PLAN

(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. | **PROJECT NO: R3278** | **FIGURE NO: 6.4–2**

Photograph 6.4-1. Cenex Site-Slumping Waste Rock at Shaft-October 01, 2002

Photograph 6.4-2. Cenex Site-Debris and Waste Rock-October 01, 2002

6.5 Don Henry Mines – Shaft (Repeat Inspection)

6.5.1 Location and Access

Site Inspection: 27 September 2001

Location: NTS Mapsheet 74N-10
UTM Zone: 12
UTM (Shaft): 6223903 m N
(NAD 27) 0638683 m E

6.5.2 2003 Inspection

The Don Henry site was inspected as part of the Year 2 program. A detailed description of the site is provided in the Year 2 report.

Additional attempts were made to locate the shaft in 2002. With the assistance of Mr. George Bihun, Conservation Office with Saskatchewan Environment, the shaft was located.

Figure 6.5.-1 shows the site location. Figure 6.5-2 shows the site plan. Photograph Nos. 6.5-1 to 6.5-3 show the shaft area.

The shaft is located west of Gutzke Lake on the north side of an east-west trending ridge.

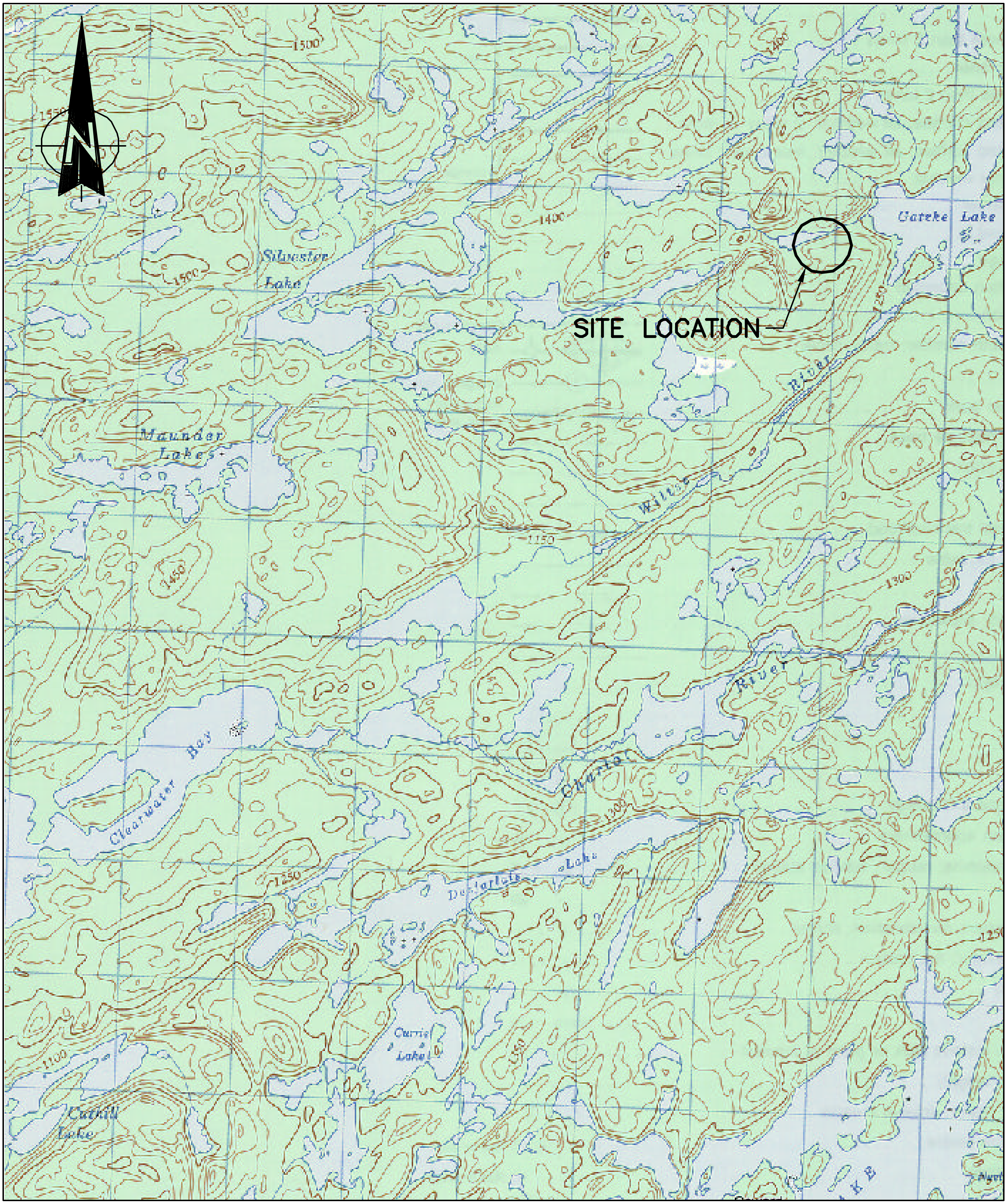
The shaft opening is about 2 m in diameter. The shaft was flooded to surface.

Approximately 1,000 m^3 of waste rock is spread out from the shaft to the south. The waste rock had visible sulphides but there was no evidence of acid generation or mineral precipitation. The rock is fine grained suggesting it may have been considered ore and was crushed as part of the plan to transport it off-site.

A water sample from the shaft was obtained. Field measurements were as follows:

Time: 1:12 p.m. – 01 October 2002
Temp: 3.8°C
Conductivity: 110 µSv/hr
pH: 4.95

Water quality results are shown in Table 6.5-1. Results show the water has elevated concentrations of arsenic and Radium-226. All other concentrations are within Saskatchewan Surface Water Quality Objectives.

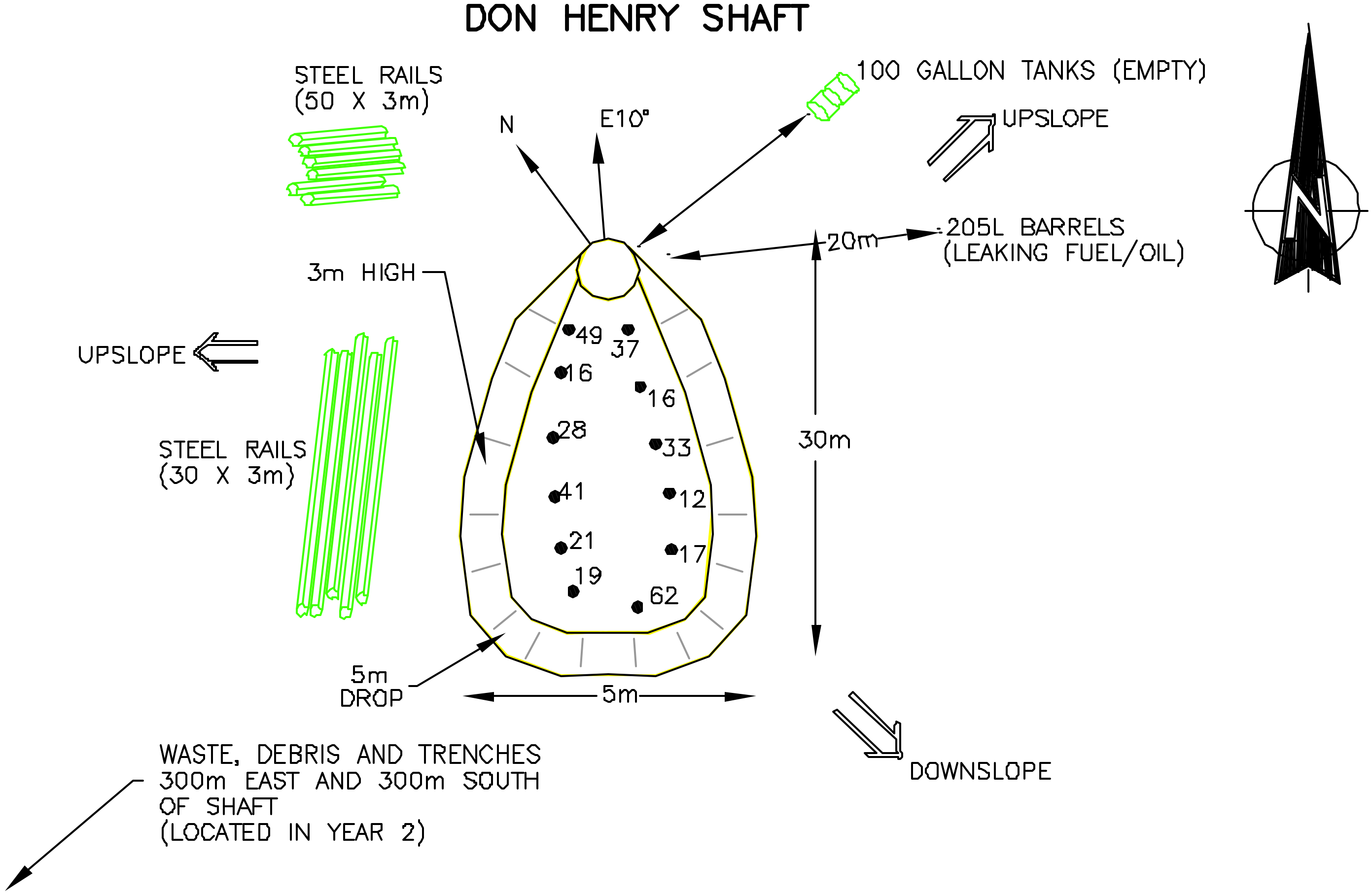


NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 74 N 10.

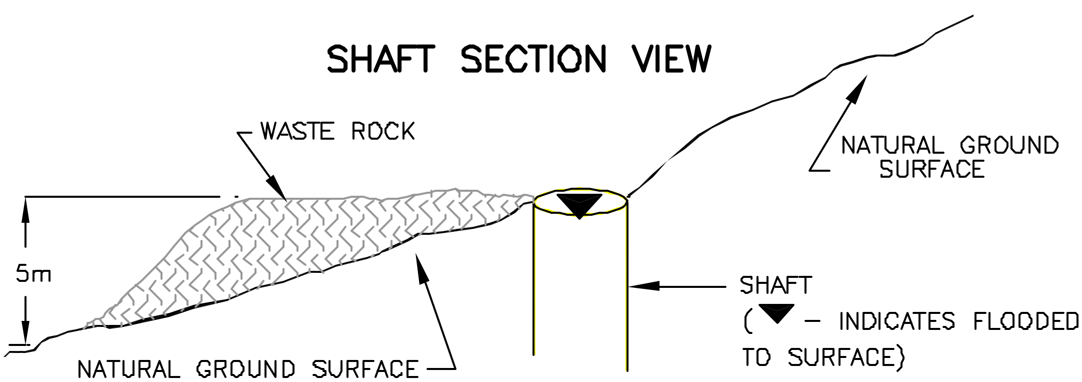
SITE LOCATION PLAN
DON HENRY URANIUM MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.5–1

DON HENRY SHAFT



SHAFT SECTION VIEW



LEGEND:

Roads/Trails	black line
Mine Workings	yellow line
Waste Rock	grey line
Body of Water	blue line
Scrap Material/Debris/Refuse	green line
Building/Foundation	orange line
Tailings	orange line
Natural Ground Surface	black line
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	●
Soil Sample Location	●

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

DON HENRY MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.5–2**

A considerable amount of debris is located around the shaft area. Approximately 50 – 200 L barrels are located east of the shaft. Several of the barrels are still sealed and contain liquid which is likely fuel. There is evidence of leakage from the barrels. A larger 500 L (100 gallon) tank is located northeast of the shaft. This tank is empty, several rails are located north of the shaft.

Gamma valves on the waste rock vary from 0.19 to 0.49 μSv/hr. Background gamma values are 0.2 to 0.3 μSv/hr.

With shaft conditions known, the ranking for the Don Henry site is recalculated as follows:

Public Safety Assessment	10
Environmental Assessment	5.0
Combined Total Assessment	15.0

Additional points were attributed to the presence of an open shaft, water in the shaft, steep waster rock (< 5 m) moderate threat from chemicals (fuel product in barrels) and a moderate risk to wildlife.

6.5.3 Follow-up Work

Follow-up work should include removal of the liquid product in the barrels. This could be done by accumulating the fuel in one location and burning it off. Empty barrels and rails should be pushed into the shaft. The shaft should then have a concrete cap secured over it.

Table 6.5-1
Don Henry Shaft-Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.300	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	1.4	0.05
Boron (B)	mg/L	0.023	
Barium (Ba)	mg/L	0.065	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.003	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	<0.001	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	0.005	0.025
Phosphorous (P)	mg/L	0.040	
Lead (Pb)	mg/L	0.003	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	<0.002	
Strontium (Sr)	mg/L	0.090	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.092	0.05
Total Major Metals			
Calcium (Ca)	mg/L	9.70	
Potassium (K)	mg/L	1.50	
Magnesium (Mg)	mg/L	3.70	
Sodium (Na)	mg/L	2.700	
Iron (Fe)	mg/L	9.20	1
Manganese (Mn)	mg/L	0.230	
Silicon (Si)	mg/L	6.20	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units		
Radionuclides			
Uranium (U)	mg/l	0.005	0.1 to 0.2 (2)
Lead-210	Bq/L	0.100	
Polonium-210	Bq/L	0.007	
Radium-226	Bq/L	0.120	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Photograph 6.5-1. Don Henry Site-Flooded Shaft-October 01, 2002.

Photograph 6.5-2. Don Henry Site-Debris-October 01, 2002.

Photograph 6.5-3. Don Henry Site-Debris-October 01, 2002.

6.6 Box Mine - Lake Adit (Repeat Inspection)

6.6.1 Location and Access

Site Inspection: 01 October 2002

Location:	NTS Mapsheet 74N-07-NE
UTM Zone:	12
UTM (Portal):	6593020 m N
(NAD 27)	0640202 m E

6.6.2 2003 Inspection

The Box Mine was inspected in Year 2, At that time it was not known that an adit was associated with the property. The site location is shown in Figure 6.6-1. The site plan of the adit is shown in Figure 6.6-2. Photograph Nos. 6.6-1 to 6.6-3 show the area around an open and sealed adit.

An open adit was subsequently located as part of the Year 3 program. The adit is located on the east shore of Vic Lake. There is a considerable amount (>1,000 m^3) of waste rock associated with the adit.

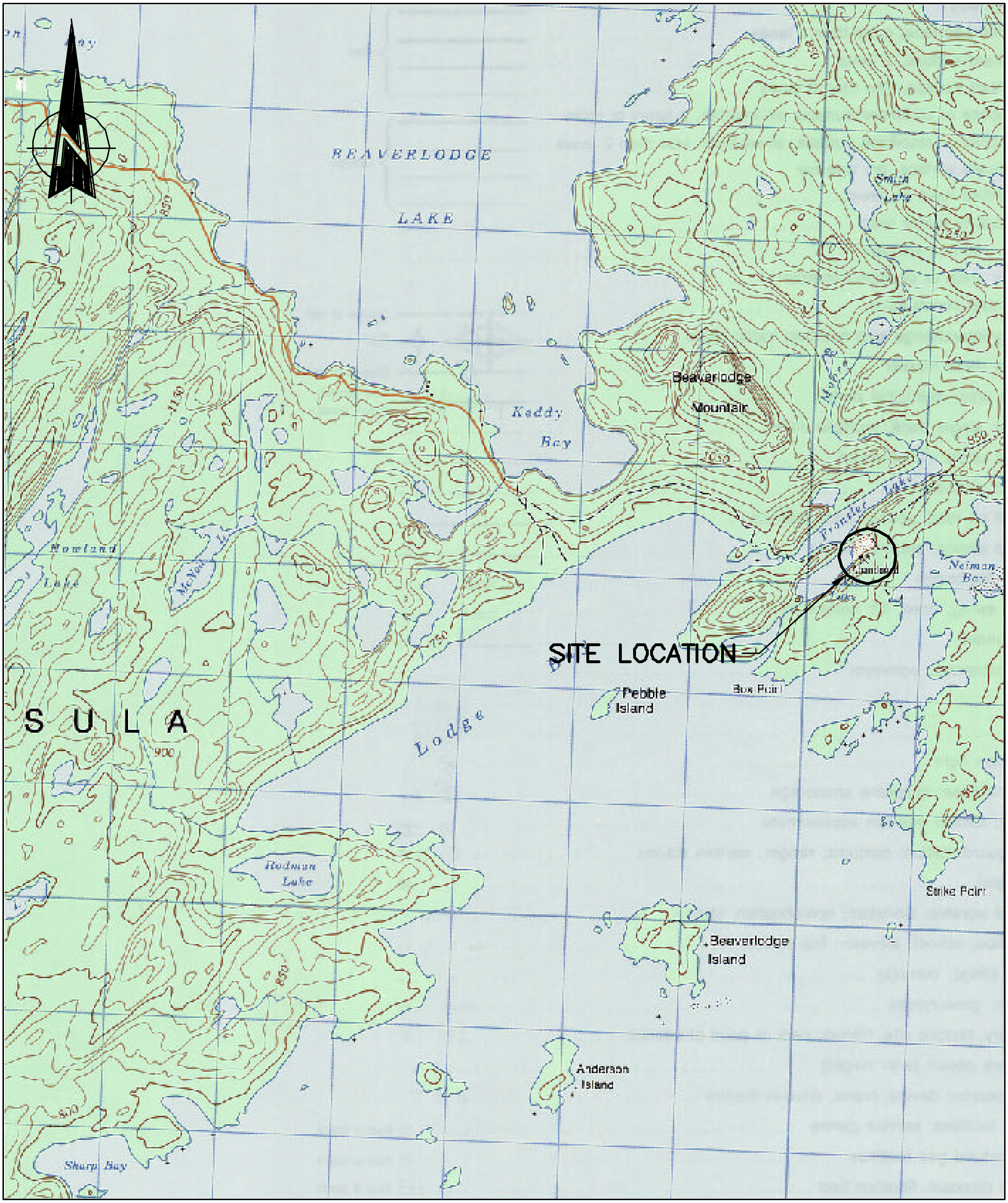
About 200 m^3 of waste has been pushed into Frontier Lake. The waste rock is pegmatitic in nature with apparent high amounts of quartz and potassium feldspar minerals.

The adit opening is about 100 m from the shore of Vic Lake. There is assorted types of debris located along the entire west shore of Vic Lake, including lumber, vent ducts, steel rails, barrels and various types of scrap metal.

There is a discharge line leading from the adit to Vic Lake although there is no sign of mineral precipitates at the end of the pipe.

The adit appears to be steeply declining although the opening is plugged with lumber. There is a high vertical drop above the adit from the adjacent hillside.

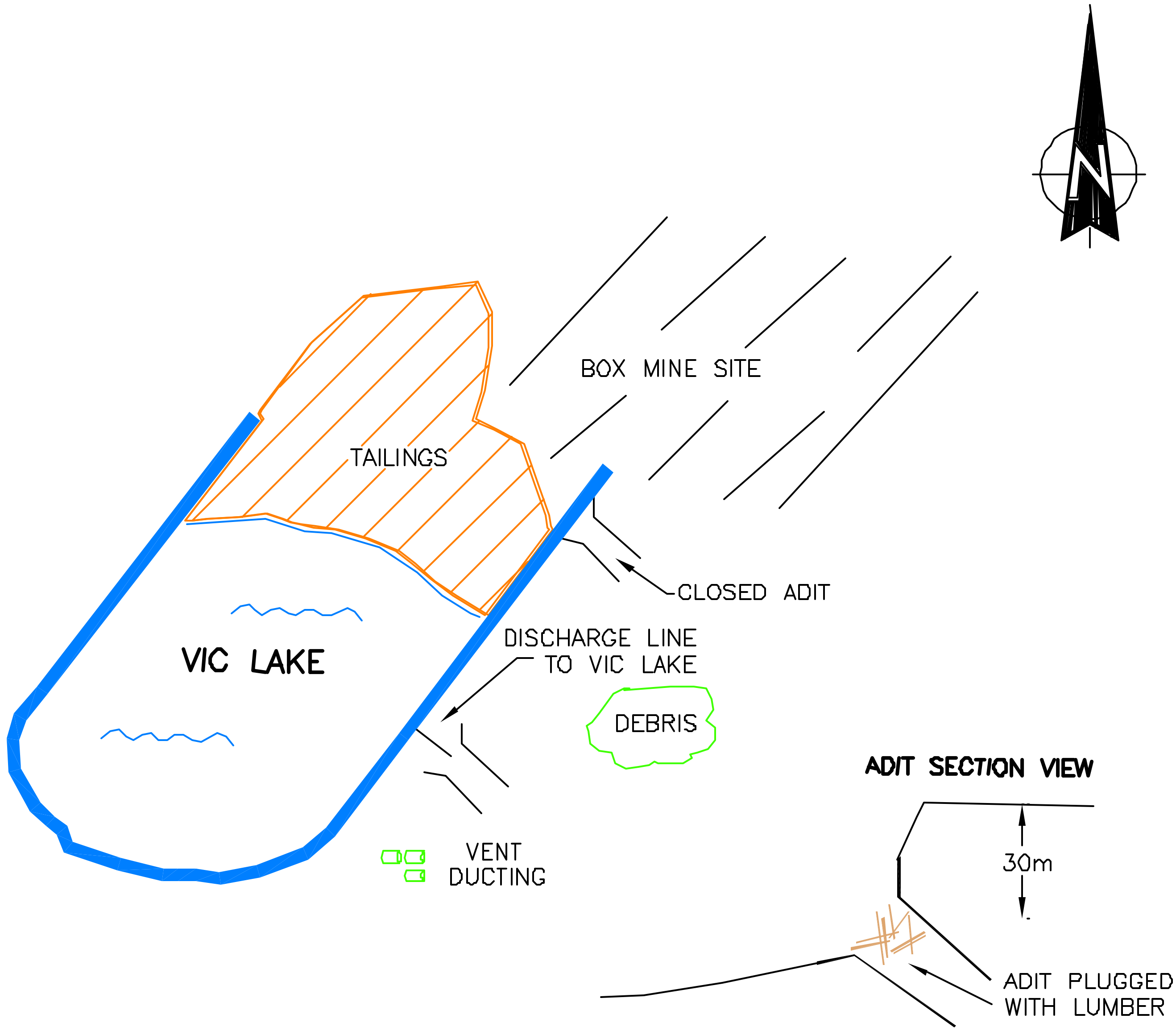
A second adit is located about 300 m north and 300 m east of the adit on Vic Lake. The second adit is located on the north end of Vic Lake where tailings exist. The adit has been sealed with waste rock and does not present any type of hazard.



NOTE:
DRAWING DEVEOLPED FROM
SCANNED NTS MAP 74 N 7.

SITE LOCATION PLAN
BOX MINE – FRONTIER LAKE ADIT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.6–1



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

BOX MINE – VIC LAKE ADIT SITE PLAN

(NOT TO SCALE– DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.6–2**

In terms of the assessment ranking, the Box Mine, considered in its entirety (mill, shaft, debris, waste rock) ranks second hazardous next only to the Gunnar site. Although an additional opening and waste rock has been identified, the ranking will not change because it is already high.

6.6.3 Follow-up Work

Follow-up work on the adit should be combined with clean-up work at other parts of the property and should include pushing debris into the adit and blasting it closed to permanently seal the opening and to remove the steep rock frame above the adit.

Photograph 6.6-1. Box Mine Site-Portal-October 01, 2002.

Photograph 6.6-2. Box Mine Site-Waste Rock Extending into Frontier Lake-October 01, 2002.

Photograph 6.6-3. Box Mine Site-Sealed Portal-October 01, 2002.

6.7 Prince Albert Mine

6.7.1 Location and Access

Site Inspection: 18 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 43' 04" lat 102°'16'15" long	6066805 m N 675781 m E	6066820 m N 675784 m E

* Location recorded by GPS during Year 3 field program

** Locations obtained by converting field measurement using on-line conversion program

The site is located 24 km west of the Town of Creighton on the northwest shore of Amisk Lake. From the community of Denare Beach, on Amisk Lake, the site is 14 km to the northwest. The site is accessible by boat.

The site location is shown in Figure 6.7-1. The mine site plan is shown in Figure 6.7-2. Photograph Nos. 6.7-1 to 6.7-7 show the site.

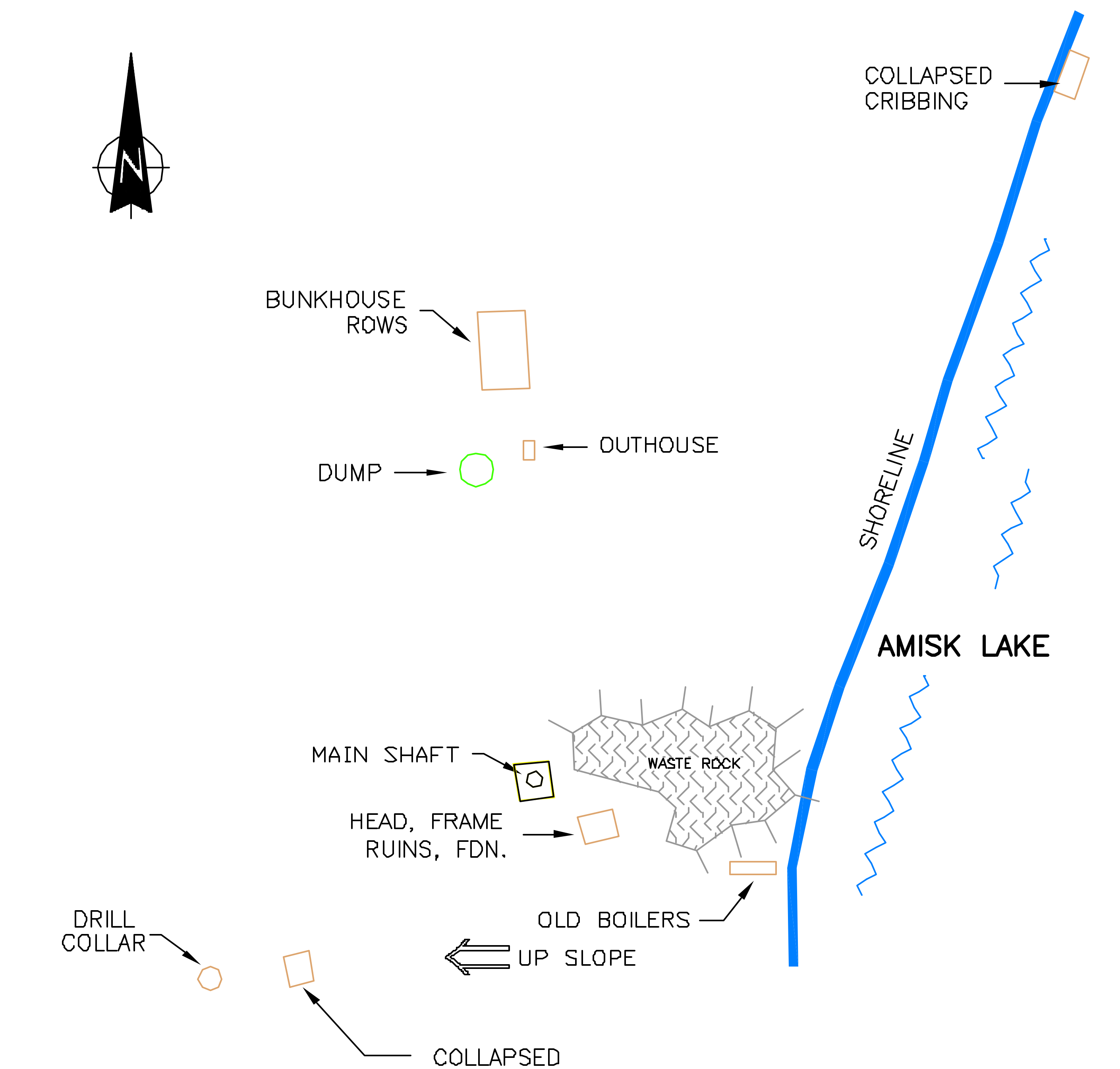
6.7.2 Ownership

Saskatchewan Mineral Deposit Index Number: 0086
Property: S-98062, 95937 (formerly: PRINCE ALBERT, HURON, MONARCH claims)
Location: Amisk Lake – West Channel
Owner(s): BEC International Corp. (40%)-Kenton Natural Resource Corp. (60%)
Commodity: Au **Associated Commodities:** Ag; Cu; Mo; Pb; As; Zn
Deposit Type: Outcrop

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
PRINCE ALBERT MINE

CLIFTON ASSOCIATES LTD. | PROJECT NO: R3278 | FIGURE NO: 6.7-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

PRINCE ALBERT MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.7-2

6.7.3 Geology

The Prince Albert or Monarch Gold Mine (Amisk Syndicate Property) is located on the west side of the west channel of Amisk Lake approximately 2.01 km (1.25 miles) northeast of the north tip of Tarrington Island.

The Pamon or Monarch deposit is a typical mesothermal gold-quartz-carbonate-pyrite-arsenopyrite-chalcopyrite-galena vein type deposit. The mineralized veins occur along the flank of a major phase 3 north-trending fault and within subsidiary fractures that cut the host interbedded Amisk Group and Missi Group greywacke. The greywacke is intruded by a few small bodies and dykes of diorite, quartz-feldspar porphyry, quartz porphyry, and aplite. The mineralization occurs at the contact between the volcanics and metasediments within a zone of silicification and carbonization where the north-trending shear intersects part of an overturned fold on the west limb of the main North Channel anticline (locally referred to as the Pamon Antiform). The axial plane trends 015°/55 to 60°NW and plunges 35°NW. Locally, the greywacke and quartz-feldspar porphyry are altered to quartz-carbonate-sericite schist.

The ore body consists of a sulphide mineralized shear zone hosted massive quartz vein that is up to 45.7 m (150 ft) long and up to 2.4 m (8 ft) wide. The normally 0.6 to 1.5 m (2 to 5 ft) wide quartz vein parallels a 1.2 to 3.7 m (4 to 12 ft) wide shear zone that can be traced over a strike length of 487.7 m (1,600 ft) This vein, which trends 015°/55°NW, lies within and parallels the host shear. A sill of highly altered quartz-feldspar porphyry parallels the vein and, locally, forms the deposit foot wall. The No. 1 vein fingers out into a series of veinlets and stringers at either end. Native gold occurs associated with sericite and as small specks and, occasionally, as large blebs in the massive white glassy quartz. Disseminated pyrite and arsenopyrite plus minor galena, chalcopyrite, and molybdenite occur as scattered grains and crystals in some sections of the vein. Sericite occurs as minute fracture fillings in the quartz vein and is often associated with the finer gold. The wall rock bordering the vein is highly carbonatized and contains disseminated pyrite and arsenopyrite.

Two mineralized veins form the deposit. The main or No. 1 vein has a surface strike length of 36.5 m (120 ft) and an average width of 0.6 m (2 ft). This ore shoot, which dies out below a vertical depth of 27 m (90 ft), feathers out south of the shaft and is fault truncated to the north of the shaft. The No. 2 vein is a northwest trending subsidiary vein that increases in width from the surface to the 90 foot (27.4 m) level and remains open below the 200 foot (61.0 m) level. Frank McDougall (Claude 1997) interpreted the host porphyry at the mine to be of the same generation as and possibly extruded by the same pulse as the nearby porphyry which hosts the Laurel Lake deposits.

In 1986 drill hole 86-3 intersected a Cu-Ag-Au zone which assayed 1.55% Cu, 1.27 oz./ton Ag and 0.041 oz./ton Au over a 2.59 m (8.5 ft) interval. Old mine plans refer to this as the No. 3 vein which was reported to assay 1.25% Cu and 0.11oz/ton Au. 1986 drill hole 86-5 intersected a 2.28 m (7.5 ft) wide Cu-Ag Zone which assayed 1.18% Cu, 0.71 oz/ton Ag, and 0.022 oz/ton Au. This zone corresponds to a new zone of mineralization which was discovered by the 1986 mapping program. Grab samples from this zone returned up to 1.77% Cu, 1.64 oz/ton Ag, and 0.084 oz/ton Au. In 1997, G. Angell completed prospecting and soil sampling on a grid on S-99730 which is located close to the Monarch Mine (hard to locate due to poor maps) (AF 63L09-0424). Soil samples returned 220, 370, 470, 350 and 690 ppb Au. In the same year, F. McDougall detail mapped the geology of the showing. He noted that free mercury could be panned from the soil on the trail immediately below the old mill site.

6.7.4 Exploration History

In 1913, the PRINCE ALBERT, HURON, EXTENSION and MONARCH claims were staked over the showing area for Beaver Lake Gold Mining Company. The showing was discovered in 1914 by Jack Hammel's prospectors and the main vein was stripped over a length of 46.0 m (150.9 ft).

In 1921, the property was transfered to Prince Albert Gold Mines Limited and in 1936, the property was leased to Monarch Gold Mines Limited.

In 1937, Monarch Gold Miners Syndicate exploration work consisted of diamond drilling, detailed sampling and the sinking of an inclined shaft on the vein to a depth of 27.4 m (90 ft). The work outlined a ore shoot with a 0.6 m (2.0 ft) width over a strike length of 36.5 m (120 ft). A 25 ton per day mill was installed on the property. In late 1936 to early 1937, the shaft was deepened. The first gold brick was poured in April 1937. In August 1937, the No. 2 vein was discovered on the 33.5 m (110 ft) level. The ore returned 735.76 oz. gold and 172.26 oz. silver. Operations ceased in October of 1937.

Pamon Gold Mines Ltd. purchased the property from Prince Albert Mine in the summer of 1938. Pamon Gold Mines Ltd. operated the mine from 1938 to 1945. A 68.6 m (225 ft) shaft and 2 levels were completed, the first of which was developed nearly to the surface

In 1939, Hudson Bay Exploration optioned the property and completed 609.7 m (2,000 ft) of surface diamond drilling, 70.1 m (230 ft) of drifting was completed on the 33.5 m (110 ft) level. In October of 1940, the mine re-opened under the management of O.G. Macdonald who leased the property from Pamon. By the end of 1940, the shaft had been dewatered. In 1941, the shaft was deepened to 61 m (200 ft) and a 200 foot level drift was commenced to mine the No. 2 vein.

In May of 1942, the headframe and mill were destroyed by a fire and the mine closed.

In 1944, a four hole surface diamond drill program was completed to test the ore body grade and thickness at a depth of approximately 304.8 m (1,000 ft). Results were not favourable. Between 1945 and 1951, the property was mapped for the Saskatchewan Department of Mineral Resources by A.R. Byers and C.D.A. Dahlstrom.

In 1982, Greenstone Resources staked part of the zone as S-95937. By 1986, BEC International Resource Corporation had staked the showing as S-98062. In this year, Kenton Natural Resource Corporation geologically mapped and lithologically sampled the showing area and completed ground VLF-EM and magnetic surveys. This was followed up by soil sampling, prospecting, detail geological mapping, 8 drill holes and sluicing and trenching to investigate the geophysical-geochemical trends.

In 1989, Greenstone Resources completed prospecting and rock sampling over their portion of the mine horizon which was covered by S-95937. Sample number 40403, a grab sample of the mine horizon chert, returned 2.00 oz./ton Au. In the same year, a Cameco (50%)-Husky Oil (50%) partnership completed a regional till sampling program north of the showing.

In 1997, Claude Resources completed grid geological mapping and prospecting to the north of the showing on the Pamon Extension grid. No anomalous gold values were returned by samples taken. In the same year, F. MacDougall re-examined the geology of the past producing mine for Claude Resources.

In 1998, Claude Resources completed ground VLF and magnetic surveys immediately to the north and west of the mine site. In the same year, they completed geological mapping, prospecting, and rock sampling of the showing area. The prospecting located several large barren white quartz veins.

6.7.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.7.5.1 General

The Prince Albert Mine site was inspected on 18 October 2002. Access to the site was achieved by boat from Denare Beach, landing at the shoreline beside the mine workings. Snow, 2 cm thick, covered much of the ground surface.

The site is situated on the steep slope of a 35 m high hill adjacent to the lake. A large waste rock pile, scrap machinery and a dilapidated cabin are readily visible from the lake but the inclined shaft opening itself can not be seen from the lake. Proximal to the mine workings are concrete ruins and building remnants. Forest vegetation is moderate to sparse (along the rocky shore and around the shaft and waste rock pile), consisting of mature spruce and some birch and poplar. Scrub brush has encroached onto sites of the former buildings.

There was no evidence of recent visitation, but flagging tape at the shaft suggests exploration-related sampling in the past several years. Other evidence of exploration activity are survey lines cut through the forest, and claim posts (tag S-106260) dated May 18, 1999.

6.7.5.2 Mine Workings

The mine workings are situated about 10 m above and 20 m in from the shoreline, and consist of an inclined shaft and stope. The workings are readily visible, but the steep and deep excavation and partial caving of back-filled loose rock into the stope presents a very dangerous condition.

The surface opening of the inclined shaft is about 10 m long by 6 m wide, funneling down to a rectangular stope 10 m long and 3 m wide. The stope continues to the south for a distance of at least 10 m where a 2 m square rock opening provides access to the stope. Timber shoring is visible in the stope. It appears that the stope originally daylighted to surface, and was later backfilled with coarse waste rock to a depth of 3 m where it was held up by the timber shoring. A 3 m wide quartz vein in sheared sulphide stained host rock is exposed along the north wall of the shaft.

The shaft and stope were flooded at the time of the inspection. Because of the hillslope, the observed water level differed, being 3 m below the opening of the 2 m square opening and 6 m below the opening of the inclined shaft. The water surface was frozen and was higher than the adjacent lake level. No unusual colouration was observed in the water. Pieces of loose shoring were floating in the pooled water. No discharge from the stope / incline shaft was observed.

A water sample from the stope was later collected for laboratory testing. The sample location was the small 2 m square stope opening 10 m south of the inclined shaft since conditions around the shaft itself were too dangerous. The water surface was 3 m below ground surface and frozen. The sample water had a slight tan colouration but no odour. Analytical results are provided in Table 6.7-1.

Field measurements of physical parameters for the water sample were as follows:

Date:	20 October 2002
Time:	4:30 p.m.
pH	8.11
Conductivity:	134 μS/cm
Temperature:	+ 0.3^{o}C

The shaft water is mineralized in arsenic, strontium, calcium, potassium and magnesium. Several other metals are detectable but are not high.

Stability of the shaft walls is good but there is a considerable amount of loose, in-place rock (likely from blasting) and friable sheared rock on the upper edges of the shaft. Loose, fine sized waste rock (crest of the pile) occurs at the edge of the shaft opening and may present a trip / sliding hazard when walking around the opening.

Table 6.7-1
Prince Albert Mine-Stope Water Quality

Parameter	Units	Result		SSWQO (1)
		1988 (Lake)	2002 (Shaft)	
Total Trace Metals				
Aluminum (Al)	mg/L	0.031	0.010	
Antimony (Sb)	mg/L		<0.001	
Arsenic (As)	ug/L	<0.5	160.0	0.05
Boron (B)	mg/L	<0.05	0.022	
Barium (Ba)	mg/L	0.01	0.017	1
Beryllium (Be)	mg/L	<0.001	<0.001	
Bismuth (Bi)	ug/L	1.5	<1	
Cadmium (Cd)	mg/L	<0.001	<0.001	0.001
Cobalt (Co)	mg/L		<.001	
Chromium (Cr)	mg/L	<0.001	<0.001	0.02
Copper (Cu)	mg/L	0.027	0.006	0.01
Mercury (Hg)	ug/L	<0.05		
Molybdenum (Mo)	mg/L	<0.005	0.002	
Nickel (Ni) (4)	mg/L	<0.001	0.002	0.025
Phosphorous (P)	mg/L	0.07	0.020	
Lead (Pb)	mg/L	<0.005	<0.002	0.02
Selenium (Se)	mg/L	<0.001	<0.001	0.01
Silver (Ag)	mg/L	<0.001	<0.001	0.01
Tin (Sn)	mg/L		<0.002	
Strontium (Sr)	mg/L		0.130	
Titanium (Ti)	mg/L	<0.001	<0.001	
Thallium (Th)	mg/L		<0.01	
Vanadium (V)	mg/L	<0.01	<0.001	
Zinc (Zn)	mg/L	0.053	<0.005	0.05
Total Major Metals				
Calcium (Ca)	mg/L	15	20.0	
Potassium (K)	mg/L	1.4	2.20	
Magnesium (Mg)	mg/L	5	5.60	
Sodium (Na)	mg/L	2.8	1.50	
Iron (Fe)	mg/L	0.17	0.900	1
Manganese (Mn)	mg/L	0.009	0.055	
Silicon (Si)	mg/L	<0.2	1.20	
Zirconium (Zr)	mg/L	<0.001	<0.001	
pH	pH Units	8.28	7.10	
Radionuclides				
Uranium (U)	mg/L	n/a	n/a	0.1 to 0.2 (2)
Lead-210	Bq/L	n/a	n/a	
Polonium-210	Bq/L	n/a	n/a	
Radium-226	Bq/L	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Stability of the waste rock plugging part of the stope is very poor. On the surface, a 0.5 m diameter hole has developed where the broken rock has collapsed into the opening. The hole is 6 m deep and open to the flooded stope. It appears that the plugged stope could open over the next several years. The workings present an significant hazard to people, and large wildlife which will not be able to escape from the workings.

Upslope of the inclined shaft, a drill collar with protruding drill casing was observed.

6.7.5.3 Waste Rock

Waste rock, excavated from the inclined shaft and stope, has been placed on the steep bedrock hillslope and extends into the lake. The slope is about 2:1 to 3:1 and the stability of the piled rock is good. The pile covers an approximate area of about 20 m by 40 m and about 5 m high The estimated volume is 4000 m^3 based on the observed size of the pile and visible workings. The coarse waste rock appears to be a sheared metasediment and metavolcanic with quartz veining. Sulphide mineralization was not readily evident. Scrub brush and small trees encroach along the edges of the waste rock pile. The pile does not appear to present a public safety or environmental hazard.

6.7.5.4 Tailings

No tailings were observed on the site. However, the possibility of tailings being produced at the mine is high since a 23 tonnes was located onsite and ore processed. The tailings may have been disposed into adjacent Amisk Lake. Visible from the air is an irregular discolouration concentration beneath lake surface, just south of the waste rock pile and beside the shoreline, and which may represent tailing, a shallowing of the lake subsurface or some natural cause. However, Saskatchewan Environment and Public Safety (1989) reports that ore was amalgamated at the site and shipped to Flin Flon for processing.

6.7.5.5 Debris

There is large amount of debris scattered about the site. Along the shoreline are large pieces of rusty machinery, and two steam boilers. A 205-litre steel barrel containing a sand-like material was observed beside the concrete ruins of the mill / headframe. At a drill site upslope of the shaft, there are large pieces of rusted machinery. North of the inclined shaft was a junk pile beside an outhouse, containing a burning barrel and pieces of scrap machinery parts. Nearby, at the ruins of the building, a rusty 205-litre barrel and assorted scrap has been discarded. Cribbing has been discarded along the shoreline, near the dilapidated cabin. The debris does not appear to present a public safety or environmental hazard.

6.7.5.6 Site Buildings

Three building ruins were found. Upslope and west of the inclined shaft is a collapsed wood frame building. The stability of the wood-frame building is poor and will eventually collapse further. North of the shaft is a dilapidated building (4.6m by 7.6m) that was constructed of stucco on framed chickenwire. Along the shoreline, at the north end of site, is a dilapidated cabin (4.6m by 7.6m) constructed of stucco on wood logs. The walls remain standing but the roof has collapsed. Inside the ruins is a scrap stove made of a 205-litre barrel.

Submerged in the lake, 5m to 10m offshore, are timber and stone cribs. The purpose for these cribs is not known but they may have been for an extensive dock.

6.7.6 History of Previous Inspections

Saskatchewan Environment and Public Safety (1989) inspected the site in 1988. Work included acquiring a lake sediment sample 20 m offshore in 3 m of water. It was noted that the sediment appeared to be natural lake sediment with no tailings present. A water sample was collected in the same location on Amisk Lake from a depth of 0.15 m.

On the shoreline below the mill site, a heavy steel barrel unit may have been used for amalgamation. The rust filled soil in the drum was sampled. No evidence of metallic mercury was noticed.

Water quality results from the 1988 inspection are shown in Table 6.7-1. In addition to the parameters shown in Table 6.7-2, the following major ion analyses are with noting.

Table 6.7-2
Major Ions
Amisk Lake Near Prince Albert Mine – 1988

Parameter	Unit	Value
C1	mg/L	1.4
$HC0_3$	mg/L	66
SO_4	mg/L	4.1
TDS	mg/L	95
Total Hardness	mg/L	58
C. Total Organic	mg/L	8.4
C. Total	mg/L	21

The material in the steel drum was reported to be nearly all iron (79%) and is also very high in mercury, arsenic and cadmium. The analyses indicate that the drum was used for amalgamation.

The levels of Co, Cr, Cu, Ni, Zn and U were reported normal in the mill site, ore and lake sediment samples. Lead levels are high in the mill site and slightly high in the ore and lake sediment. The level of arsenic is very high in the mill site soil (1.3%) and high in the ore (0.59%), and the lake sediment (0.11%). Mercury levels are high at the mill site, low in the ore and elevated slightly in the lake sediment. Gold concentrations are high at the mill site and in the ore.

The ore was tested for acid production potential and found to have low sulphur content (0.25%) and high acid consumption capability.

Fish from Amisk Lake have been analyzed for mercury content in 1970-71 with the following results.

Species	Mean Mercury Concentration (mg/kg)
Whitefish	0.09
Pike	0.27
Walleye	0.30

6.7.7 Risk Assessment Ranking

Public Safety Assessment	16
Environmental Assessment	11
Combined Total Assessment	27
Ranking	2/26

The site is easily seen from the lake, thus increasing the chance of visitors being exposed to dangerous conditions. Stability of the partially plugged stope is of concern. Therefore, two points were attributed to the “additional public safety risks” category.

Given that (a) there is an unknown volume of waste rock potentially in the lake; one point was attributed to the “additional environmental risks” category.

6.7.8 Recommended Follow-up

The primary follow-up work should be directed at removing public safety hazards since the site is easily accessible, has dangerous fall-in hazards with the possibility of sudden collapse of a backfilled stope. The inclined shaft and stope should be sealed either by in-filling with onsite waste rock or blasting in the openings. Hazard warning placards should be posted should reclamation activity be delayed. Scrap machinery and metal debris should be removed for proper disposal. All buildings should be knocked flat, and the debris either left to rot, burned or thrown into the shaft before being sealed. The concrete ruins could be left as is.

Photograph 6.7-1. Prince Albert Mine-Aerial View-October 23, 2002

Photograph 6.7-2. Prince Albert Mine-Stope Opening-October 18, 2002

Photograph 6.7-3. Prince Albert Mine-Discarded Equipment-October 18, 2002.

Photograph 6.7-4. Prince Albert Mine-Concrete Footings and Debris-October 18, 2002

Photograph 6.7-5. Prince Albert Mine-Discarded Barrel with Sand or Concentrate-October 18, 2002

Photograph 6.7-6. Prince Albert Mine-Delpidated Building-October 18, 2002

Photograph 6.7-7. Prince Albert Mine-Inclined Shaft and Stope-October 18, 2002.

6.8 Laurel Lake North Gold Zone

6.8.1 Location and Access

Site Inspection: 18 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM* (portal)
54° 42’ 10” lat 102° 15’ 29” long	6064953 m N 676676 m E	6065842 m N 676835 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located at the northwest end of Missi Island, on Amisk Lake, about 12 km northwest of the community of Denare Beach. Site access is gained by boat from Denare Beach, travelling a distance of 18 km or 27 km across Amisk Lake via the North Channel or West Channel, respectively. From a small dock on the west side of Missi Island, there is a 400 m long road leading to the site which is near the north end of Laurel Lake.

The site location is shown in Figure 6.8-1. The site plan is shown in Figure 6.8-2. Photograph Nos. 6.8-1 to 6.8-6 show the site.

6.8.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 2133
Property: (formerly: CBS 3102)
Location: Amisk Lake – Laurel Lake area
Owner(s): Open – see Section 6.8.4 for previous owners
Commodity: Au
Associated Commodities: Au; Cp; As, Mo; Gn; Sf; Sb
Deposit Type: Outcrop

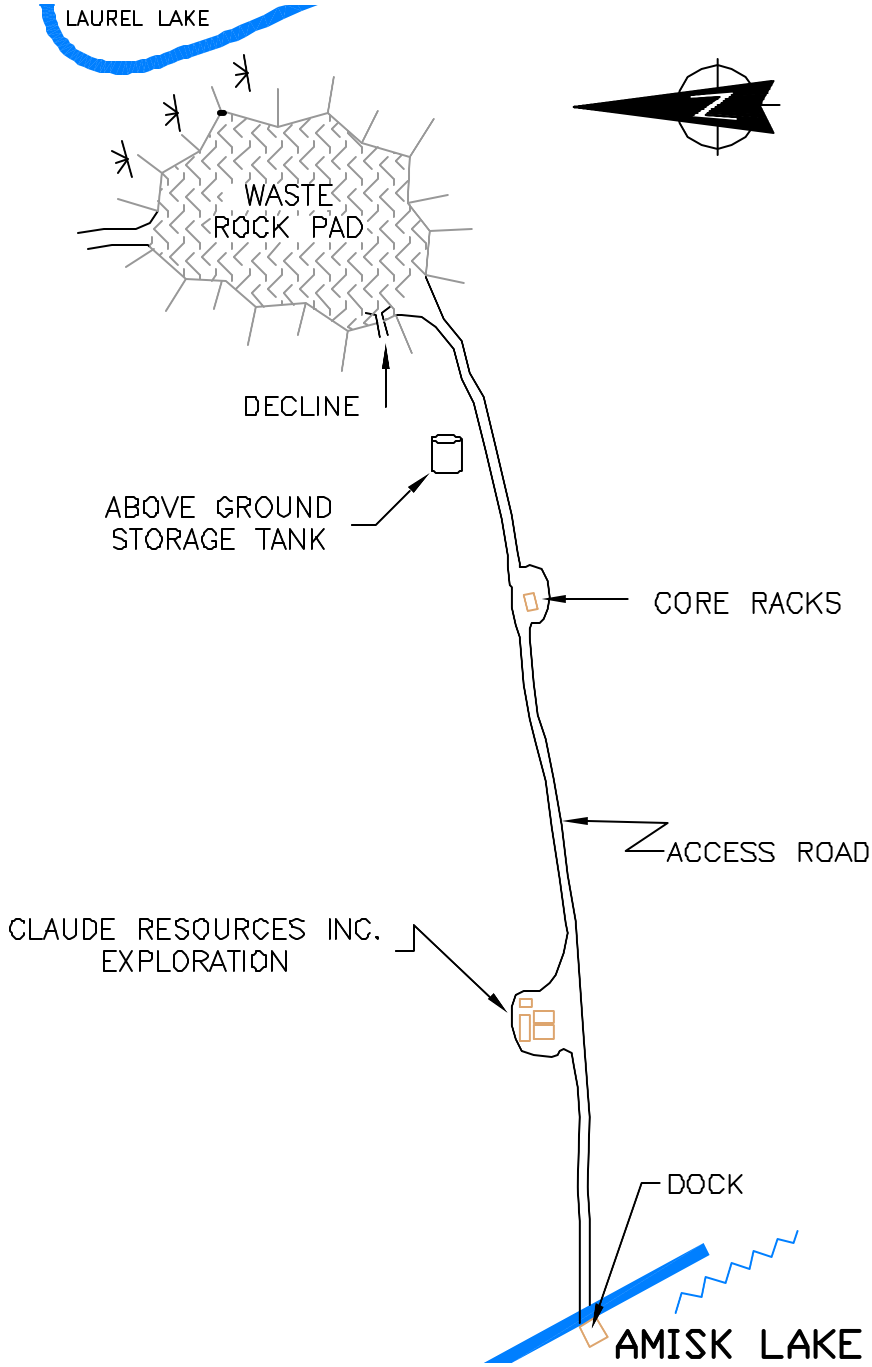
6.8.3 Geology

The showing area lies at the southeast exposed end of the Flin Flon - Snow Lake Greenstone Belt which in this area is composed of a lower, metavolcanic Amisk Group and an upper, metasedimentary Missi Group. Both groups are of Aphebian age.

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
LAUREL LAKE NORTH GOLD MINES

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.8-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

LAUREL LAKE GOLD MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.8-2**

The North Laurel Lake Au-Ag Zone appears to comprise a roughly northwest-trending, steep westerly dipping system of high grade sulphide rich feeder veins hosted by a massive, strongly altered quartz-porphyritic rhyolite intrusion. A roughly west-northwest trending system of lower grade sulphide disseminations and stock works developed in altered coarse porphyritic felsic fragmentals, tuffs and porphyritic flows on the western flank of the intrusive is also present. Both systems are open along strike and down dip.

The local geology of the Laurel Lake deposit is dominated by a massive quartz porphyry stock and a compositionally similar apron of fragmentals. At the northwest end of Laurel Lake the stock is in contact with an overlying porphyritic fragmental cap. At its widest point the fragmental apron appears to be several hundred meters thick. Its contact with the massive stock is complex and locally interfingered. Immediately over the stock the cap consists of a number of individually recognizable units, some of which are of limited lateral extent.

All of the units in the vicinity of Laurel Lake have been intruded by a series of feldspar porphyritic dacite dykes and sills. The porphyry stock contains fewer dykes than does the fragmental cap. The dykes in the vicinity of the zone strike roughly north-south, dip steeply to the west and crosscut bedding and major unit boundaries at sharp angles.

Structurally, the core of the stock and the flow basalts are relatively undeformed. The fragmental porphyry, the overlying tuffs and dacite dykes and sills are deformed to varying degrees by two fold episodes. Close to the massive stock the deformation is limited to nonexistent. Locally, the area has seen at least three main deformational events. The D1 event was a north-south compressional event that flattened primary structures. The D2 event, an east-west compressional event, produced a pervasive north-south trending fabric. The D3 event was a brittle event that produced east-west trending folds. Several sets of late brittle faults less than 1 m (3.3.ft) wide cut the area.

The 1997 mapping program outlined five sulphide-tetrahedrite veining events, the first four events have been effected by asymmetric folding and boudinage due to the D1 and D2 deformational events.

Economic mineralization consists of gold and silver with minor associated base metals. Some remobilization and reconcentration of the precious metals has occurred during post-volcanic tectonism. The broad area of intense alteration in and around the Laurel Lake stock appears to have been developed by the same hydrothermal system that deposited the precious metals. Near surface, within the massive porphyry, the zone consists of a broad envelope of intense sericitization several hundred metres wide containing low grade gold values ranging from

0.34 to 1.71 g/tonne. Within this a number of zones of higher grade mineralization occurs and can be distinguished by the dominant sulphide types. These zones are up to 7.5 m (24.6 ft) wide, strike west-northwest to north-south and have a dip which varies from 30° north near the fragmental contact to near vertical beneath Laurel Lake. From north to south the zone distribution is pyrite zone, tetrahedrite zone, chalcopyrite zone and sphalerite-galena zone.

The pyrite zone contains massive bands to irregularly distributed stringers and pods of fine, granular and friable pyrite.

The tetrahedrite zone consists predominantly of tetrahedrite-tennantite-enargite with minor associated coarse grained pyrite, chalcopyrite and traces of sphalerite. This zone is the most persistent and intensely sericitized of any of the zones.

Within the chalcopyrite zone, chalcopyrite occurs as irregular pods and blebs up to 5 cm (1.97 inches) wide, with pyrite as the main accessory mineral.

The sphalerite-galena zone is characterized by sugary blue quartz veins which contain sphalerite and chalcopyrite.

Other sulphide minerals which occur in minor amounts within the mineralized zones are arsenopyrite, molybdenite and stibnite.

The distribution ratio of silver to gold varies throughout the Laurel Lake system but generally averages 5 to 1. Most of the gold occurs as fine free gold within fractures and along intergranular boundaries within the sulphides. The gold most commonly occurs in direct association with chalcopyrite and enargite. The silver is carried by tennantite-tetrahedrite particularly in the north-northwest- trending feeder vein system. The average sulphide content of both systems is only in the one to three per cent range. Near surface (down to 60 m or 196.9 ft), the sulphides are strongly oxidized.

An extensive alteration halo consisting principally of sericitization, bleaching and development of a bright green mica surrounds the mineralized zones. This halo is up to 100 m (328.1 ft) wide in the west-northwest system, but much tighter, a few metres wide, in the north-northwest system.

The style of mineralization, wall rock alteration and the associated trace elements, in particular, As, Sb, Ag and Zn, suggest an epithermal mode of origin

The Laurel Lake North ore zone has an average strike length of 160 m (524.9 ft), depth of 125 m (410.1 ft) and varies in thickness from 2 to 6 m (6.6 to 19.7ft). The ore body is open at depth and along strike.

6.8.4 Exploration History

The area underlying the showing was mapped in 1954 by Byers and Dahlstrom of the Saskatchewan Geological Survey.

The Laurel Lake North Deposit was first recognized in 1982, although ten gold- bearing quartz-carbonate-sulphide veins and shears, discovered in the early 1930's, occur within a radius of two kilometers of the showing and variably make up the showings Au-23 to Au-26.

The deposit was noted as a result of prospecting and geological mapping carried out by SMDC in 1982. Grab samples were taken and assayed and returned highs of 54.8 g/t (1.6 oz./ton) Au and 320.6 g/t (9.35 oz./ton) Ag.

The results prompted limited follow-up work in 1983 consisting of surface mapping and diamond drilling on geochemical and I.P highs. Several samples assayed high gold and silver contents.

In 1984, a systematic exploration program was undertaken which included diamond drilling, surface geochemistry, detailed mapping, and Induced Polarization (IP) and resistivity surveys. Ground EM and magnetic surveys were completed over grid 81-1. As a result, an extensive system of alteration and auriferous sulphide mineralization extending from the north end of Laurel Lake to the east shore of Amisk Lake was outlined.

The mineralized trend was diamond drilled in 1985 and the majority of the holes intersected high grade Au-Ag mineralization. Surface diamond drilling continued in 1986 and 1987. Claude released probable and possible ore reserves for the eastern portion of the zone.

In 1987, SMDC completed VLF-EM, magnetic, IP and pole-dipole surveys over the showing.

Early in 1988, SMDC announced plans to proceed with underground exploration to evaluate the distribution of the ore zones. A decline was scheduled to begin in June, 1988 and completed before the year end to allow direct examination of the ore at depths of 40 and 80 m (131 and 262.5 ft) in order to confirm mineralization continuity. It was also intended to allow detailed underground drilling to establish reserves with greater certainty. The results of the

1988 program formed the basis for a feasibility study which could have led to construction of a mine complex at Laurel Lake in 1989.

In 1995, Claude Resources entered into an option agreement with Cameco and Husky Oil operations to develop the property.

On 23 October 1996, Claude Resources announced new reserves for the Laurel Lake Deposit which resulted from a 31 hole Phase I and Phase II drill program drill holes AL96-223 and -228 to -231 tested the Portal Zone - or the A2c portion of the A Zone. Infill phase II drilling tested the Main or A Zone and the Laurel B Zone and phase III drilling tested these zones at depth. Phase IV drilling was be conducted along strike from these zones.

In the following year, Claude completed detailed mapping of the showing host rhyolites and drill holes AL97-249 to -260 were completed on the Laurel Lake Main Zone.

In 1998, Claude completed drill holes on the deposit to extend potential of the mineralized zones down dip below the 200ft level.

6.8.5 2002 Inspection-Site Description

6.8.5.1 General

The Laurel site was inspected on 18 October 2002. Site access was by boat. There was a 2-cm thick snow cover over much of the ground surface. The site workings (decline and waste rock disposal area) are situated at the base of a 10 m high bedrock ridge beside a muskeg located at the north end of Laurel Lake. Moderate conifer forest cover occurs on the bedrock ridge, with grasses in the muskeg.

Signs of recent visitation include “fresh” footprints in the snow along the road to the site (seen during the site inspection), and a scrap pile at the waste rock at the disposal area.

Drill roads fan out in the area of the decline portal.

6.8.5.2 Mine Workings

Mine workings are limited to a decline, heading westward into the bedrock ridge. The portal opening is roughly 5m square and has been blocked by waste rock pushed up and into the opening. The bedrock above the portal is rock bolted with metal strapping and supported with a wood crib. The timber is stable, solid and in good condition. There is a small gap between the sealing waste rock and the portal through which an individual can gain access further into the decline, and presents a significant hazard if entered. No standing water was observed looking into the decline. No liquid discharge was noted. A sign saying “Stop” is posted above the portal but appears to have been directed to past mining vehicular traffic.

At the decline portal the surrounding felsic bedrock has a brownish-yellow pervasive stain, is sheared in areas, and has a stockwork veining containing chalcopyrite and related copper mineralization. Although the rock generally appears stable, there is small loose rock and soil above the portal.

A protruding diamond-drill casing was observed at the edge of the north edge of the waste rock pile.

6.8.5.3 Waste Rock

There is an extensive amount of coarse waste rock spread out in front of the decline portal and outward into the adjacent muskeg. It is unknown how much waste rock exists on site, however, taking the 70m by 100m dimensions of the rock disposal area which is about 3m deep (as seen at the edge), the total volume of broken waste rock is a minimum of 21,000m^3. The disposal area is level and edges are steep but stable. Unmineralized waste rock appears to overlie mineralized waste rock. The sulphide abundant waste rock shows yellow to orange staining.

At the decline portal, the waste rock pile blocking the entrance is about 5m wide and long and up to a maximum height of 5m with a slope of about 2:1. An estimated volume of the pile is 45m^3. The pile is comprised of sulphide stained and mineralized coarse waste rock, and has stable slopes. The waste rock piles do not appear to present a public safety hazard.

6.8.5.4 Tailings

No tailings were observed. Activities at the site only involved underground exploration and development, and therefore no mill was constructed which would have resulted in tailings being produced.

6.8.5.5 Debris

Debris has been thrown into the waste rock area. Items such as scrap percussion-drill rods, rock bolts, empty 20-litre plastic pails (for hydraulic oil), and assorted scrap steel were seen mixed with the broken rock. A small scrap pile was located on top of the waste rock area, and included logs cut for a crib, mattresses and general refuse; all possibly from the exploration camp. The debris does not appear to present a public safety or environmental hazard.

6.8.5.6 Site Buildings

There are no buildings or ruins in the immediate area of the decline. However, Claude Resources maintains an exploration camp 250m west of the decline. The camp consists of a double trailer office/bunkhouse, a wash trailer, and a core shack. Standard stove oil storage tanks (909 litre capacity) were situated outside the trailers. Drill core stacks were also at the camp. The camp was in a clean and tidy condition.

A drill core storage area occupies an area of 15m by 25m, and holds several thousand metres of BQ size core. The wood and steel rod racks are in reasonably good condition although a few of the core trays have collapsed. Several pallets of stacked drill core (in wood trays) was also present. The core storage area is 125m west of the decline.

An above ground fuel storage tank was located 50m west of the decline. The steel “envirotank” was one-third full of diesel fuel. No leaks or stains were observed, although part of the tank was rusty. A pick-up truck (in poor condition) is parked beside the tank.

6.8.6 History of Previous Inspections

The property is an active exploration site and appears to be visited on a regular basis.

6.8.7 Risk Assessment Ranking

Public Safety Assessment	10.5
Environmental Assessment	8
Combined Total Assessment	18.5
Ranking	8/26

The risk assessment ranking did not consider the exploration camp. Although the site is not visible from Amisk Lake, the presence of the dock and an obvious trail leading to the site could encourage visits by recreational tourists and entry into the decline through the small opening. Hazardous conditions may exist inside the decline. The trail may also be used for snowmobile travel. Therefore, one point was attributed to the “additional public safety risks” category. In addition, due to the presence of mineralized waste rock in the muskeg beside Laurel Lake, one point was attributed to the "additional environmental risks" category.

6.8.8 Recommended Follow-up

Follow-up activities should immediately involve the proper sealing of the decline entrance. Additional waste rock can be pushed into the opening by bulldozer, or the bedrock can be blasted down. Hazard warning placards should be posted should reclamation activity be delayed.

Photograph 6.8-1. Laurel Lake Gold Mine-Aerial View-October 23, 2002.

Photograph 6.8-2. Laurel Lake Gold Mine-Portal-October 18, 2002

Photograph 6.8-3. Laurel Lake Gold Mine-Panoramic View of Waste Rock-October 18, 2002

Photograph 6.8-4. Laurel Lake Gold Mine-Above Ground Fuel Tank-October 18, 2002.

Photograph 6.8-5. Laurel Lake Gold MIne-Drill Core Storage Area-October 18, 2003.

Photograph 6.8-6. Laurel Lake Gold Mine-Exploration Camp-October 18, 2002.

6.9 Amisk (Beaver) Gold Mines

6.9.1 Location and Access

Site Inspection: 19 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 42' 32" lat 102^{o} 16' 51cc" long	6065576 m N 675183 m E	Inclined Shaft 6065355 m N 675256 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located at the north end of the West Channel, on Amisk Lake, 14 km northwest of the community of Denare Beach. Site access is gained by boat from Denare Beach. The mine workings are 30 m to 50 m from the shoreline.

The site location is shown in Figure 6.9-1. The site plan is shown in Figure 6.9-2. Photograph Nos. 6.9-1 to 6.9-6 show the site.

6.9.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0090
Property: ML 5275 (was: LUCKY claim No. 4; VICTORY claims 1,2; JUNE 1-5)
Location: Amisk Lake – northeast shore
Owner(s): Open – see Section 6.9.4 for previous owners
Commodity: Au **Associated Commodities:** Cu; Zn; Pb; Ag; An
Deposit Type: Outcrop

6.9.3 Geology

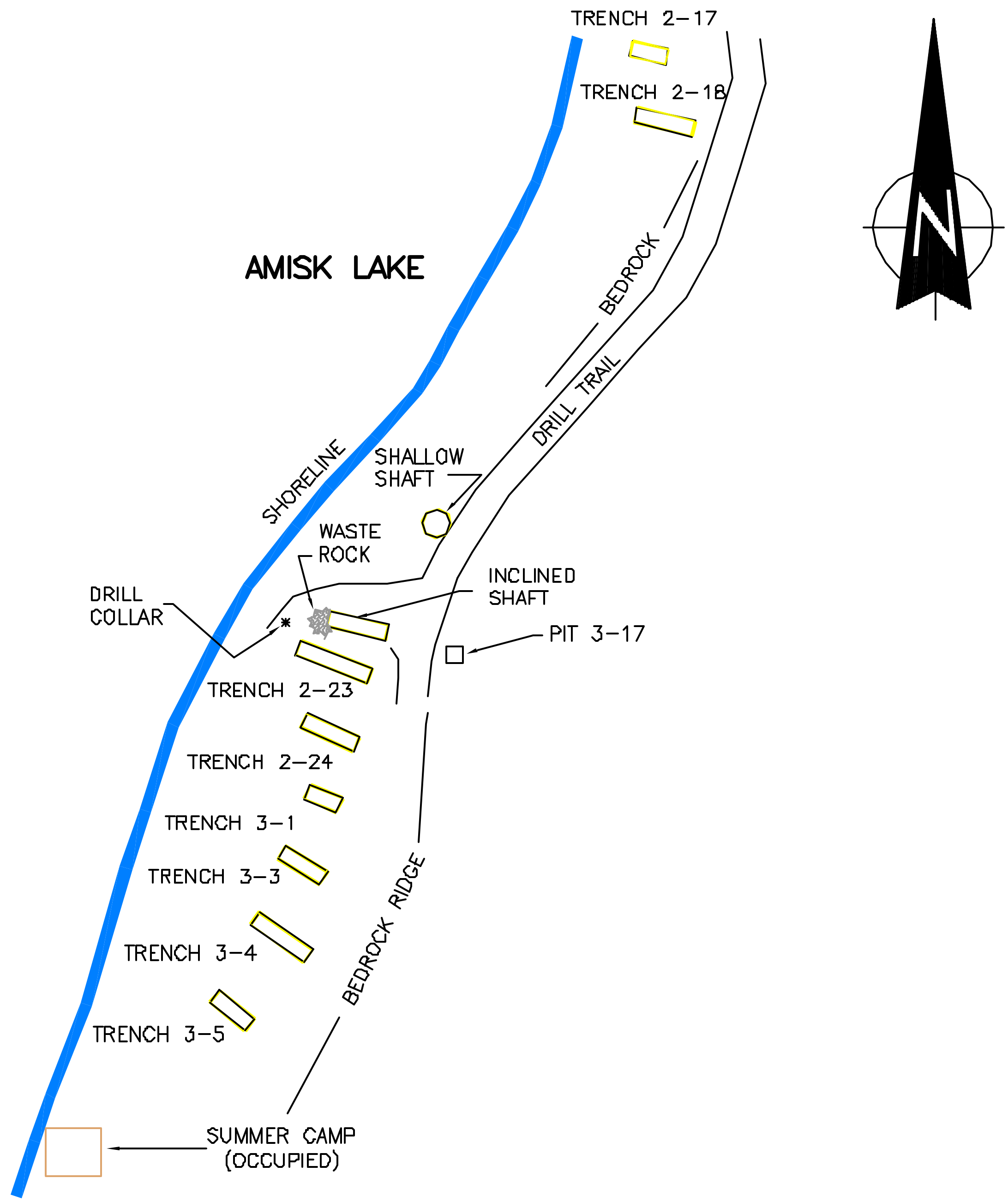
The Amisk Gold Syndicate Showing or the AGS Showing consists of mineralized zones located on the west side of a narrow peninsula on the northeast side of Amisk Lake. The showing is exposed by 12 trenches and 2 shafts.

The showing host rock is a fine-grained, massive, greywacke. At the showing, the greywacke is sheared, sericitic, carbonatized (ankerite and minor calcite as fine disseminations and veinlets) and silicified. The showing follows a sheared contact between Amisk Group volcanics to the west and greywackes to the east. Locally, the rocks which strike 170° and

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
AMISK (BEAVER) GOLD MINES

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.9-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

AMISK GOLD MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.9-2

dip 70°W form part of an overturned limb of an isoclinal fold. The zone trends 173° and dips 29 to 48°SW.

The main mineralized zone, which follows the western shore of the peninsula for about 915 m (3,000 ft) from the peninsula tip, is overlain by a gossan that can be up to 6.1 m (20 ft) deep. The auriferous portion of this zone has a strike length of 121.9 m (400 ft) and a width of 4.6 m (15 ft).

The mineralization consists of disseminated pyrrhotite, native gold, chalcopyrite, sphalerite, and galena in minor amounts with arsenopyrite and pyrite in slightly higher abundances. Gold is erratically distributed and the grade is sub-ore. The gossan assayed 0.28 oz/ton on assay. A sample of fresh rock underlying the oxidized material returned 0.43 oz/ton Au. The principle ore was reported to be arsenopyrite. Cyanidation tests gave 90% recoveries.

Between 1981 and 1982, SMDC sampled and mapped the zone in 3 uncaved trenches. In trench A, the zone orientation is 009°/34°NW. The orientation in trench B is 015°48°NW and the orientation in trench G is 173°/29°NW. Results of the samples can be obtained from Saskatchewan Industry and Resources.

Starting in 1989, Cameco completed a series of holes to test the zone. In 1998, Claude Resources completed further drilling in the immediate area of the zone. The results can be obtained from Industry and Resources:

6.9.4 Exploration History

The property was first staked in 1928 by G. Chatten. In 1930, the claims were transferred to Amisk Gold Syndicate.

Between 1932 and 1936, the showing was within the JUNE claim group. Amisk Gold Syndicate completed a series of trenches and sunk a 6 ft x 10 ft adit (named the Victory Adit) to a depth of 2.9 m (114 ft) on the "Amisk Lake Gold Mine".

Between 1936 and 1960, the showing was covered by E. J Hansen VICTORY claims Nos. 1 and 2 or S-3050 and S-3051. During this period, Hansen completed 8 trenches on VICTORY claim 2 to expose the mineralization. Eight drill holes totally 320 m (1,050 ft) were completed. Two shafts were also completed. One shaft was on the north part of the property (on VICTORY claim No. 2) at a depth of 38 m (125 ft) and inclined at 45^{o} with a short crosscut at 32 m (105 ft). The second shaft was completed on the south part of the property (on VICTORY claim No. 1) to a depth of 6.1 m (20 ft). The two shafts are 68.6 m (225 ft) apart.

During the same period of time, Hansen completed 1 trench and 6 drill holes on the east side of Tarrington Island near the north tip of the island (on VICTORY claim No. 1) one trench to the north of the showing on VICTORY claim No. 3, and 3 trenches to the west of the showing on VICTORY claim No. 6.

By 1972, the showing was within LUCKY claim No. 4. Hudson Bay Exploration completed ground terrain and electromagnetic surveys over the claim.

In 1977, SMDC completed a ground reconnaissance that covered the showing. By 1980, the showing area was covered by ML 5275. In 1980, SMDC completed an EM-17 and magnetic surveys over the property. In the same year, J. Pearson geologically mapped the property for the Province of Saskatchewan.

Between 1981 and 1982, SMDC detail mapped the showing, sampled the existing trenches and completed a ground EM survey over the immediate showing area.

In 1985, SMDC completed a single line biogeochemical survey over the showing. In 1987, SMDC completed ground VLF-EM and magnetic surveys over the showing. In 1989, Cameco completed drill holes 3AL9-204 to -207 on the AGS Showing. The better intersections are reported above.

Claude Resources Inc. optioned Cameco's Laurel Lake and Missi Island properties. In 1998, Claude completed geological mapping, prospecting, and a ground magnetic survey on ML 5275 and drill holes PAM98-1 to PAM98-7 to test conductors immediately adjacent to the Amisk Gold Mine or Victory Adit.

6.9.5 2002 Inspection-Site Description

6.9.5.1 General

The Amisk (Beaver) Gold Mines site was inspected on 19 October 2002. Site access was by boat, landing on the west shore of the peninsula where the workings are situated. There was a 2 cm thick snow cover blanketing most of the ground surface.

The site workings are located on the west slope and centre of a 2 km long peninsula. A bedrock ridge, up to 30 m high, runs the length of the peninsula. Mature forest cover, of moderate density, consisting mainly of conifers and some birch and poplar covers the peninsula, but is less around the workings. Looking from the lake, the workings are concealed by the shoreline vegetation.

There was no evidence of recent visitation, but flagging tape at some of the workings suggests exploration-related sampling in the past several years. Other evidence of exploration activity is the presence of drill roads and drill pads cut in the forest.

A summer cabin is located about 200 m south of the workings, along the west shore of the peninsula.

6.9.5.2 Mine Workings

Mine workings consist of: (a) eight rock trenches, of varying length and depth; (b) an inclined shaft and trench; and (c) two pits, one of which may be a prospect shaft. The workings are exposed over a distance of 450 m, from near the shore to about halfway up the 30 m high bedrock ridge. The west hillslope is moderately steep.

For purposes of this investigation, the various workings were assigned letter identifiers, A to I, in order to distinguish them form each other.

Trenches ‘A’ to ‘H’ range in length from 6 m to 18 m, 1.5 m to 3.6 m wide, and are nominally 1.8 m deep. However, Trenches ‘F’ and ‘G’ were 3 m and 6 m deep in places. Figure 6.9-2 provides the measured dimensions of each trench. The trenches have steep side slopes to vertical rock walls and are stable. Scrub bush and several mature spruce and birch trees (8 cm to 16 cm diameter) have grown in the trenches. Since the trenches have been excavated into the hill slope, and thus themselves sloped downward to the west, there was no accumulated water in these workings.

The inclined shaft and trench is one of the largest workings. The trench is 4.6 m wide and extends downslope for 18 m ending as a shaft-like feature that is 7.3 m deep, with vertical rock walls. It is believed that this represents the “inclined shaft” as described in the Saskatchewan Mineral Deposit Index (SMDI) inventory. Scrub bush has ingrown in the trench, with semi-mature spruce established along the upper edges. Windfall trees have partially covered the shaft opening portion of the trench.

The inclined shaft was flooded to a depth of 7.3 m, with the frozen water surface 4.2 m below the shaft lip. The remainder of the sloping trench had no accumulated water. The water level in the inclined shaft is close to the adjacent lake level, suggesting a hydraulic connection to Amisk Lake.

A water sample from the inclined shaft was collected. Analytical results are provided in Table 6.9-1. Field measurements of physical parameters for the water sample, obtained the next day, were as follows:

Date:	20 October 2002
Time:	3:00 p.m.
pH	7.95
Conductivity:	588 μS/cm
Temperature:	+ 1.1^{o}C

The shaft water is highly mineralized with arsenic (1,210 μg/l). Strontium, calcium, magnesium and iron are also present in detectable concentrations but to a lessor extent then arsenic.

Pit ‘I’ appears to be a shallow exploratory excavation, with a 1.8 m high backwall against a bedrock knob. Large coarse pieces of waste rock have been piled along the pit edges. Small trees have grown inside the pit.

The prospect shaft is 4.5 m square and 4.5 m deep, with a dry bottom of coarse waste rock. This shaft-like feature (or pit) is located about 68 m north of the inclined shaft, (not south as described in the SMDI inventory). Trees have grown inside of and along the pit edges.

The SMDI inventory reports the past existence of an adit (to a depth of about 35 m), however, no adit-like structure could be located during the site inspection.

Table 6.9-1
Amisk Beaver Gold Mine-Shaft Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.029	
Antimony (Sb)	mg/L	0.002	
Arsenic (As)	ug/L	1,210.0	0.05
Boron (B)	mg/L	0.036	
Barium (Ba)	mg/L	0.008	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.002	
Chromium (Cr)	mg/L	0.020	0.02
Copper (Cu)	mg/L	0.006	0.01
Molybdenum (Mo)	mg/L	0.001	
Nickel (Ni) (4)	mg/L	0.003	0.025
Phosphorous (P)	mg/L	0.060	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.006	
Strontium (Sr)	mg/L	0.150	
Titanium (Ti)	mg/L	0.004	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.021	0.05
Total Major Metals			
Calcium (Ca)	mg/L	69.000	
Potassium (K)	mg/L	3.000	
Magnesium (Mg)	mg/L	34.000	
Sodium (Na)	mg/L	0.700	
Iron (Fe)	mg/L	1.600	1
Manganese (Mn)	mg/L	0.140	
Silicon (Si)	mg/L	1.70	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	7.11	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

One diamond-drill hole location was observed, and was identified by a wooden post driven into the collar. The drill collar was located immediately southwest of the inclined shaft and trench.

The flooded inclined shaft presents a significant fall hazard due to its steep and depth walls. Large wildlife could not escape a fall from the shaft. The other deep trenches present a fall hazard if walked into blindly. The shallow trenches and pits are not a significant public safety hazard.

6.9.5.3 Waste Rock

Waste rock, ranging in size from pebble to cobble size has been piled along the edges of the various trenches and pits. The amount of waste rock is commensurate with, or less than, the volume of rock excavated from the workings. Trees and scrub bush have typically encroached onto the waste rock piles, which are of low height (less than 2 m) and stable.

At the toe (nearest to the lake) of the inclined shaft and trench, there is about 16 m^3 covering an area of 6 m by 9 m and about 3 m deep. This waste rock is phyllitic greywacke, sericitic, with disseminated sulfides (giving a rusty stained surface). Pieces of quartz vein are mixed with the greywacke. The waste rock has been placed on top of bedrock that slopes westward down to the lake. Precipitation and snowmelt runoff can percolate through the broken rock and drain toward the lake about 20 m away.

The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.9.5.4 Tailings

No tailings were observed. The workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.9.5.5 Debris

Only a small amount of debris was observed in the vicinity of the trenches. This included a rusty bucket at Trench 'A', and pipe fittings and a pail seen protruding from the waste rock pile at the toe of the incline shaft and trench. Nearer to the shoreline was a crudely made rock oven on which were placed pieces of rusty pipe fittings and part of a steel barrel. The debris does not appear to present a public safety or environmental hazard.

6.9.5.6 Site Buildings

No buildings or ruins were observed.

6.9.6 History of Previous Inspections

No record of previous inspections were located.

6.9.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	9
Combined Total Assessment	19
Ranking	7/26

Although most of the trenches and pits are shallow and removed from public view, there are significant public safety hazards associated with the site. First, the inclined shaft area is partially obscured by trees and windfall, has steep high walls and the shaft is flooded. Second, two of the trenches ('C' and 'F') present fall hazards due to their depths and vertical walls. Third, anecdotal information indicates that small children are present at the nearby recreational cabin during the summer months. Furthermore, the location of a reported adit could not be found and may potentially be a hazard. Therefore two points were attributed to the "additional public safety risks' category.

Given; (a) the presence of standing water in the incline shaft; and, (b) that the shaft water could possibly be hydraulically connected to adjacent Amisk Lake, one point was attributed to the "additional environmental risks" category.

6.9.7 Recommended Follow-up

The primary follow-up should be directed at backfilling the inclined shaft and the deeper trenches to eliminate fall hazards. The surrounding waste rock should be pushed into the excavations, and the trench walls blasted down to seal the openings. An additional inspection should be undertaken to verify that an adit or prospect shaft does not exist on the site.

Photograph 6.9-1. Amisk Gold Mine-Aerial View-October 23, 2002.

Photograph 6.9-2. Amisk Gold Mine-Trench 'A'-October 19, 2002.

Photograph 6.9-3. Amisk Gold Mine-Prospect Shaft/Pit-Ocotber 19, 2002

Photograph 6.9-4. Amisk Gold Mine-Trench 'F'-October 19. 2002.

Photograph 6.9-5. Amisk Gold Mine-Trench 'G'-October 19. 2002.

Photograph 6.9-4. Amisk Gold Mine-Trench 'H'-October 19, 2002.

6.10 Beaver Mine

6.10.1 Location and Access

Site Inspection: 19 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 41’ 38” lat 103^{o} 16’ 15” long	6063933 m N 675892 m E	6063705 m N 675888 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located on a peninsula on the west side of Missi Island, on Amisk Lake, 13 km northwest of the community of Denare Beach. Site access is gained by boat from Denare Beach. The mine workings are adjacent to the east shoreline of the peninsula, which flanks a narrow bay.

The site location is shown in Figure 6.10-1. The site plan is shown in Figure 6.10-2. Photograph Nos. 6.10-1 to 6.10-3 show the site.

6.10.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0098
Property: ML 5239 (formerly: ADA claim No. 4; BEAVER claim group)
Location: Amisk Lake – west shore of Missi Island
Owner(s): Open – see Section 6.10.4 for previous owners
Commodity: Au **Associated Commodities:** Cu; Ag
Deposit Type: Outcrop

6.10.3 Geology

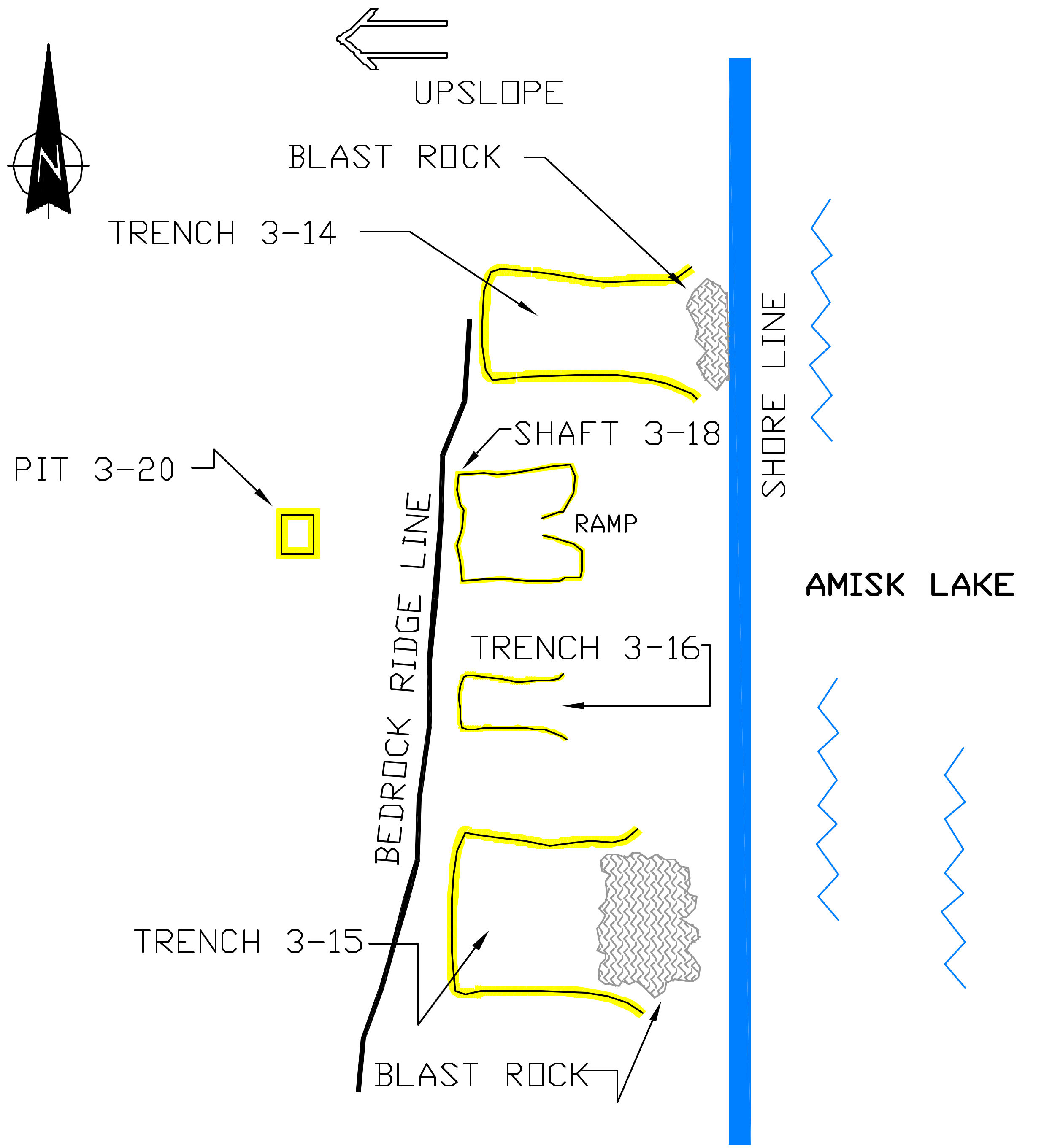
The main Beaver Showing occurs in a mineralized epithermal fracture zone which is situated on the east side, and about 701 m (2,300 ft) from the north end of the peninsula immediately east of Tarrington Island.

The bedrock underlying the showing area consists of volcanic rocks with fragmental units, a complex assemblage of interlayered quartz-feldspar prophyritic rhyolite tuffs and feldspar porphyritic dacite tuffs of the Amisk Group. These tuffs pass westward into a thick unit of

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
BEAVER MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.10–1



LEGEND:

- Roads/Trails
- Mine Workings
- Waste Rock
- Body of Water
- Scrap Material/Debris/Refuse
- Building/Foundation
- Tailings
- Natural Ground Surface
- Gamma Readings (µSv/hr.) 0.25
- Water Sample Location
- Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

BEAVER GOLD MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.10-2**

massive quartz porphyritic rhyolite and eastward into a sequence of interlayered basaltic flows, dacite crystal tuffs, lapilli tuffs and rare debris flows. The showing is hosted by a quartz-filled epithermal fracture system within interlayered silicified rhyolitic to dacitic tuffs. The shaft cuts this pyritic succession of chlorite-altered tuffs and porphyries.

The mineralization consists of pyrite, magnetite, native gold and minor chalcopyrite and sphalerite. Mineralization occurs as a series of narrow seams, stringers and round lumps within the altered schist fault zone. The schists assay high gold values and gossans in the area pan visible gold.

Two diamond drill holes completed over the showing in 1946 returned assay values of 0.15 oz./ton Au over 4.4 m (14.5 ft), and 0.02 oz./ton over 1.1 m (3.5 ft). A second drill hole completed in 1956 assayed 0.01 to 0.04 oz./ton Au and 0.54 to 0.91 oz./ton Ag. In 1984, SMDC sampled the showing. Sample AL4A-4188 returned the maximum values of 1,750 ppb Au. In 1987, SMDC completed 3 drill holes on the showing. The drilling hit up to 60% pyrite and minor chalcopyrite in quartz and calcite veining. The results can be obtained from Industry and Resources.

6.10.4 Exploration History

Two diamond drill holes were completed on the showing in 1946 and returned the assays listed above. Further development work consists of trenches, test-pits, a 8.5 m (28 ft) inclined shaft, and 4 additional drill holes, drilled in 1949 to 1950.

In 1956, Noranda Mines Ltd. diamond drilled hole no. SR-1 approximately 0.8 km (0.5 miles) north of the main zone, under the lake. Assays returned the values listed above.

By 1970, the showing was covered by ADA claim No. 4. R. Mckenzie and A. Brown completed 4 trenches on the ADA claims between 1971 and 1973, 1 trench in 1974, 1 trench in 1975 and 2 trenches between 1976 and 1977. In 1972, Hudson Bay Exploration completed a ground turam and Air Born Electromagnetic Survey (ABEM) survey on the property and drilled 1 hole on ADA claim No. 5.

By 1980, the ADA claims had been converted to ML 5239. Beaver Lake Mining Company completed 3 trenches slightly south of the showing.

Between 1981 and 1982, A. Brown completed 3 trenches on former ADA claims 2 and 4 to the south of the showing. One sample returned 0.04 oz./ton Au and 0.24 oz./ton Ag. In 1986, SMDC completed lithogeochemical sampling of the trenches that constitute the Beaver

Showing. In the same year, SMDC took 2 grab samples from the showing trenches. Sample AL60-4853 assayed 0.025 oz/ton Au and 0.056 oz/ton Ag and sample AL6T-7051 assayed 0.033 oz/ton Au.

In 1987, SMDC completed ground VLF-EM, magnetic and Induced Polarization (IP) surveys over the showing area The showing was detail mapped, rock and soil sampling was completed over grid 3-87 and drill holes AL7-126 to 128 were completed to test the showing . The better intersections are given above.

6.10.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.10.5.1 General

The Beaver Mine was inspected on 19 October 2002. Site access was by boat, landing on the east shore of the peninsula where the workings are situated. There was a 2 cm thick snow cover blanketing most of the ground surface.

The site workings are located on the east slope of a 5 m high ridge near the north end of the peninsula, and are readily visible from the lake. Sparse to patchy forest, consisting of mature birch and pine, covers the ridge, but is less around the workings.

There was no evidence of recent visitation, but flagging tape at some of the workings suggests exploration-related sampling in the past several years.

6.10.5.2 Mine Workings

Mine workings consist of three short and moderately deep trenches, a shallow shaft and two small pits exposed over a distance of 30 m along the east slope of the ridge. The workings expose a sulphide stained shear containing 5% massive and disseminated sulfides in a metavolcanic rock. Figure 6.10-2 provides the measured dimensions of each working. For purposes of this investigation, the various workings were assigned letter identifiers, A to E, in order to distinguish them from each other.

The trenches are slightly sloped down to, and open to the shoreline, and dry. The upslope end of the trenches are steep and stepped, and the downslope end is level to ground surface. The two larger trenches, ‘A’ and ‘B’ are 6 m to 8 m long, 4.6 m wide and about 5.5 m high at the upslope end. Walls of Trench ‘A’ and ‘B’ are steeply sloped with blast-loosened rock in place. Soil overhangs occur at the trench edges. Small and semi-mature trees grow along the trench edges and at the toe, but the trenches are not obscured.

The shaft opening is 4.6 m square, and 3.6 m deep to the surface of accumulated water at the bottom of the shaft. The water appears to be accumulated from precipitation and snow melt, and would slowly discharge by seeping through adjacent waste rock and down toward the lake. The water depth was 0.6 m, and the shaft bottom was soft. The shaft is open toward the shore with a ramp-like earthen path allowing easy entry into the excavation. Although stable, loose rock is prevalent along the shaft walls. Soil overhangs are common. Trees grow around the edges of the shaft opening.

A water sample was collected from the shaft on 19 October 2002. Analytical results are provided in Table 6.10-1. The water sample had a pale yellow-green colour and a sulphur odour. Field measurements of physical parameters for the water sample, obtained the next day, were as follows:

Date:	20 October 2002
Time:	2:45 p.m.
pH	6.01
Conductivity:	634 µS/cm
Temperature:	+ 0.9^{o}C

The shaft water is mineralized with aluminum (.37mg/L), arsenic (2.0 µg/L), phosphorous (0.69 mg/L) and some major metals including calcium, potassium, magnesium and iron. It is worth noting the lab pH was 3.34 whereas the field pH was 6.01. The pH values can be affected by temperature and oxygen. The time to transport the samples may have affected the pH. The field pH is likely more indicative of the true pH of the water.

Pit 'E' is 2.4 m square, with a maximum depth of 2.4 m. The bit bottom was covered with coarse waste rock and was dry.

The flooded shaft and deeper trenches present a fall hazard if approached blindly from the top of the ridge. The shallow trenches and pit are not a significant public safety hazard.

6.10.5.3 Waste Rock

Small amounts of waste rock are associated with the trenches, and occur at the toe of the trench. Most of the waste rock, a chloritic shistose metavolcanic with yellow sulphidized shear rock, is at Trench 'B'. Here, the low pile of waste rock accounts for about 7 m^3, covering a 2.4 m by 3 m area and 1 m high, and comes within 1m of the shoreline. Precipitation and snowmelt run-off can percolate through the waste rock directly into the lake.

Table 6.10-1
Beaver Mine-Shaft Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.370	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	2.0	0.05
Boron (B)	mg/L	0.048	
Barium (Ba)	mg/L	0.024	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.053	
Chromium (Cr)	mg/L	0.020	0.02
Copper (Cu)	mg/L	0.010	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	0.005	0.025
Phosphorous (P)	mg/L	0.690	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.002	
Strontium (Sr)	mg/L	0.100	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.056	0.05
Total Major Metals			
Calcium (Ca)	mg/L	49.00	
Potassium (K)	mg/L	32.00	
Magnesium (Mg)	mg/L	23.00	
Sodium (Na)	mg/L	1.400	
Iron (Fe)	mg/L	26.00	1
Manganese (Mn)	mg/L	2.200	
Silicon (Si)	mg/L	11.00	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	3.34	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

At the shaft, finer broken waste rock appears to have been placed on the downslope side of the opening, now forming the entrance ramp into the excavation.

The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.10.5.4 Debris

No debris was observed.

6.10.5.5 Tailings

No tailings were observed. The workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced

6.10.5.6 Site Buildings

No buildings or ruins were observed.

6.10.6 History of Previous Inspections

No records of pervious inspections were located.

6.10.7 Risk Assessment Ranking

Public Safety Assessment	8.5
Environmental Assessment	8
Combined Total Assessment	16.5
Ranking	11/26

The site is readily visible from the lake, and the open shaft is easily accessible, thus increasing the chance that visitors may be exposed to a fall or loose rock hazard. Soil overhangs at some trenches present a fall hazard. Therefore, 1.5 points were attributed to the “additional public safety risks” category.

6.10.8 Recommended Follow-up

Follow-up should focus on sealing the shallow shaft since it poses a public safety risk. The shaft opening could be closed by backfilling with local rock. The walls of the deeper trenches could be back-filled or blasted to reduce the vertical wall heights, thus lessening risk of a fall hazard. Scaling of loose rock can also be considered if the trenches are not backfilled.

Photograph 6.10-1. Beaver Mine-View Along Shoreline-October 19, 2002.

Photograph 6.10-2. Beaver Mine-Trench 'A'-October 19, 2002.

Photograph 6.10-3. Beaver Mine-Trench 'B'-October 19, 2002.

6.11 Waverly Island Occurrence

6.11.1 Location and Access

Site Inspection: 20 October 2002
Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 40' 18" (general site location)	102^{o} 18' 30" (general site location)	Trench 'A' 6061245 m N 673575 m E Pit 'C' 6062030 m N 673699 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained by Saskatchewan Mineral Deposit Index

The site is located on Waverly Island, within the West Channel of Amisk Lake, about 14 km east of the community of Denare Beach. Site access is gained by boat, and then short walks of 10 m to 50 m from the shoreline to the various workings.

The site location is shown in Figure 6.11-1. The site plan is shown in Figure 6.11-2. Photograph Nos. 6.11-1 to 6.11-6 show the site.

6.11.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0093
Property: (formerly: OPHIR claims Nos. 1 and 2; SONORA claim No. 3)

Location: Amisk Lake – Waverly Island
Owner(s): Open – see Section 6.11.4 for previous owners
Commodity: Cu **Associated Commodities:** Au; An
Deposit Type: Outcrop

6.11.3 Geology

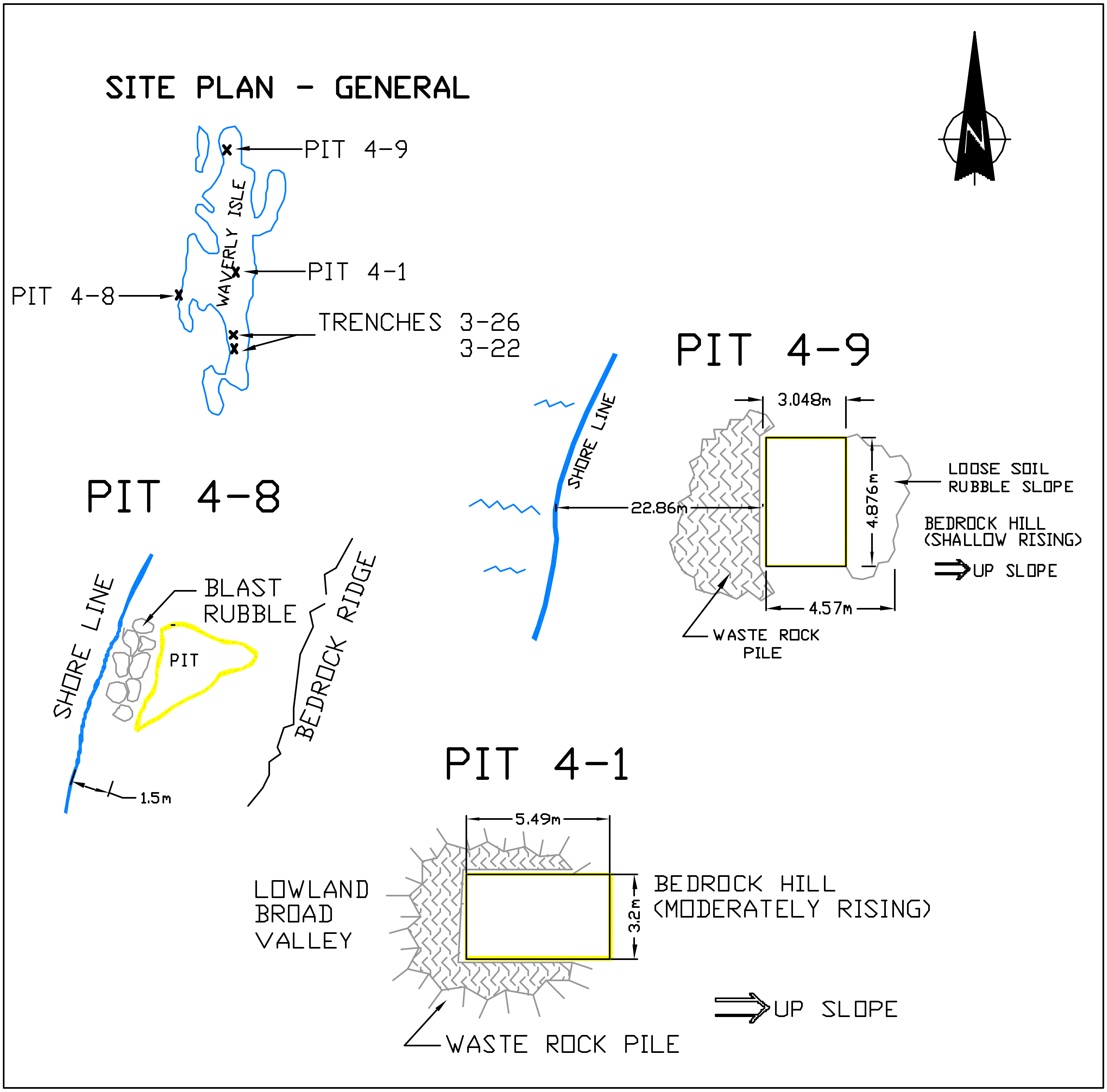
Four principle showings occur on Waverley Island which is located on the west side of Amisk Lake.

All of the showings consist of quartz veins in shear zones cutting sediments and basic lavas of the Amisk Group which have been intruded by quartz monzonite porphyry and felsite. Pyrite

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
WAVERLY ISLAND OCCURANCE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.11–1



LEGEND:

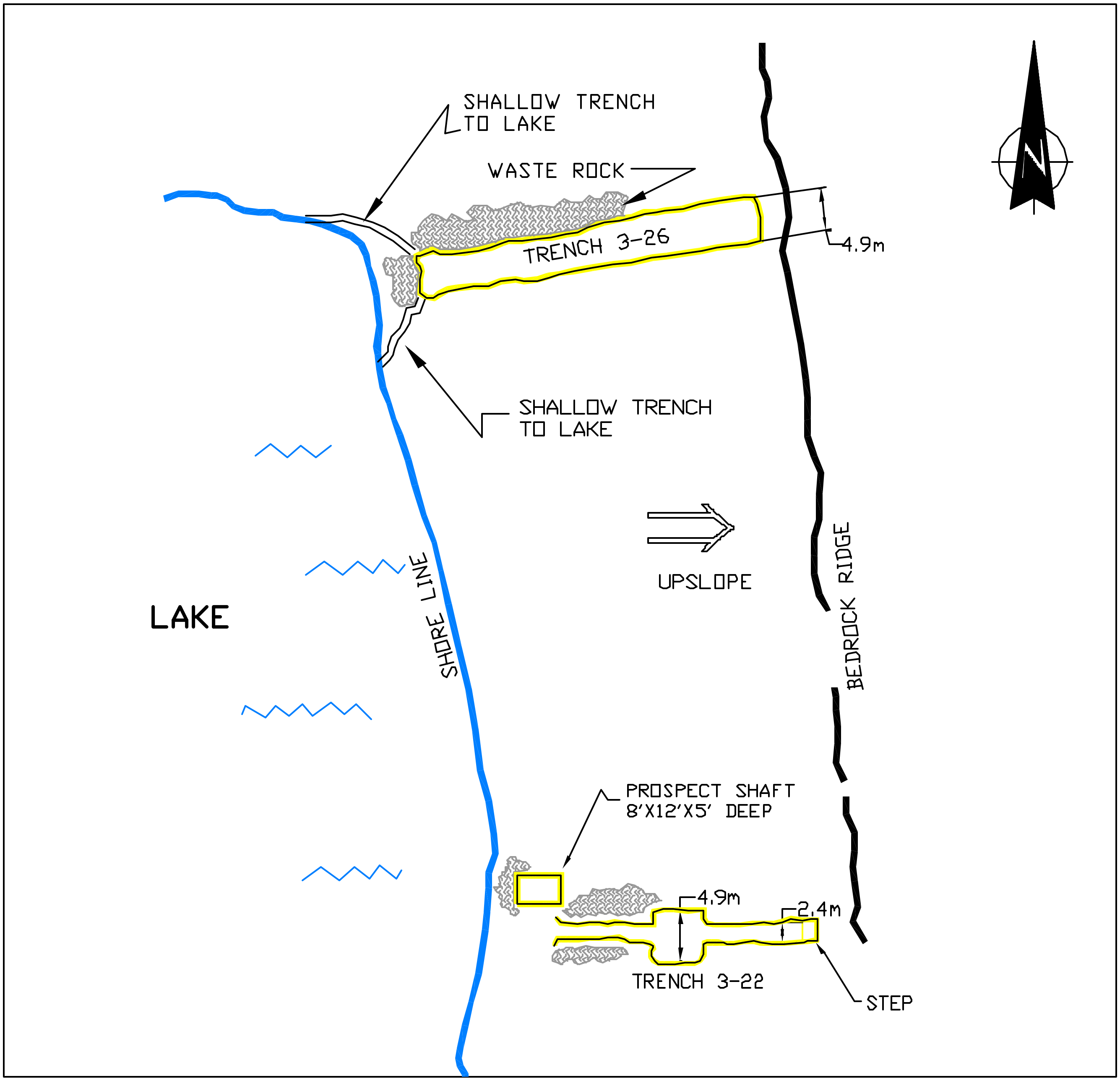
Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

WAVERLY ISLAND OCCURANCE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.11–2



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

WAVERLY – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.11–3

and arsenopyrite are also disseminated in the wall rock. The unweathered material is reported to have returned low gold values.

The mafic basalts to andesite tuffs and flows cover the east half of Waverly Island and massive, poorly bedded greywacke which contains 5-15 cm thick by several 1-2 m long lenses of black argillite (greywacke turbidites) cover the west half of the island. The contact between the two rock types is Z folded at the south end of the Island. The showing is exposed in 4 trenches and a prospect shaft. Trenches 1 and 2 occur on the northeast shore of the bay on the southwest end of the island. Trench 3 occurs in the center of the island and trench 4 occurs at the north end of the island

Trenches 1 to 3 contain mineralization in a massive greywacke. The unit has been extensively sheared and altered. The shears trend 160 to 192° and dip 75°SW. The gossaned shears contain ankerite and calcite megacrysts and veinlets and minor conformable quartz veining. The disseminated pyrite and arsenopyrite is also found in the nearby unsheared greywacke.

Trench 4 contains mineralized sheared basalt. The mineralization and shearing is identical to that found in trenches 1 to 3.

The trenched quartz veins located on the southwestern tip of the island are concentrated in the nose of the Z folded contact. These "saddle reef" type veins allign north-south and plunge steeply to the north. The veins contain pyrite, arsenopyrite, ankerite, minor chalcopyrite and one trench contains native gold. Composite sample AL10-47 taken from these quartz veins returned 0.45 oz./ton Au.

Channel sampling of trench 1 produced 1.87 ppm Au over 4.0 m or 2.7 ppm Au over 1.0 m. The gold is within sheared, gossaned greywacke. Fine gold can be panned from the gossan.

Channel sampling of trench 2 returned a maximum of 1.90 ppm Au over 1.0 m. The gold is hosted by sheared greywacke.

Channel sampling of trenches 3 and 4 returned a maximum of 0.07 ppm Au.

6.11.4 Exploration History

Between 1935 and 1939, the showing was within SONORA claim No. 3. R. Singbeil completed trenching on the showing. Five holes were completed on the showing.

In 1950, A. L. Parres completed several drill holes and blasted several trenches on the Waverley Island showing.

In 1954, Byers and Dahlstrom geologically mapped the island at 1 inch to 1 mile for the Province of Saskatchewan.

In 1960, the Keevil Mining Group completed a helicopterborne EM and magnetic survey that covered the showing area.

By 1980, the OPHIR 1 and 2 claims covered the showing. SMDC completed a ground EM survey over the property and drill holes WAV-1 to -5 on the showing. C. E. Dunn completed an orientation biogeochemical survey over the showing for the Province of Saskatchewan.

In 1981, SMDC completed a VLF-EM survey over the showing and channel sampled the four trenches on the showing. The results are given above.

On 1 December 1993, Claude Resources staked the northeast tip of Waverly Island as S-103255. In June of 1995, prospecting and rock sampling was completed on the claim (AF 63L09-0398). Grab samples, taken to test a 1.5 m wide quartz-sulphide shear zone with up to 5% arsenopyrite, returned 91 ppm Co.

6.11.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.11.5.1 General

The Waverly Occurrence site was inspected on 20 October, 2002. Site access was by boat, followed by short walks from the shoreline to the workings located at several different locations on the 1.2 km long island. There was a 2-cm to 4-cm snow cover over most of the ground during the site inspection. Waste rock piles associated with some of the workings were visible from the lake.

There was no evidence of recent visitation, but flagging tape and rock sampling marks at some of the workings suggests exploration-related sampling in the past several years. Other evidence of exploration activity is a north-south orientated baseline that cuts down the centre of the island, with less prominent crosslines.

Mature spruce forest covers the island. Topography is undulating, consisting of small, knobby, outcrop ridges.

6.11.5.2 Mine Workings

The four principal mine workings are located at three locations on the island. The identifiers 'A', 'B', 'C' and 'D' are assigned names for this investigation to distinguish the four mine workings.

Two long and deep, slightly sloped, rock trenches , 'A' and 'B', are situated at the southwest end of the island near a small bay. These trenches are located on the west slope of a bedrock ridge. In the centre of the island is Pit 'A', located on the south side of a broad outcrop hill. A pit was identified on the west shore of the island. This pit (Pit 'B') appeared to have recently been excavated. At the north end of the island is Pit 'C', situated within 4 m of the shoreline. Only Pit 'C' is visible from the lake.

Trench 'A' is about 25 m long, and nominally 2.4 m wide and deep, and dry. The centre of the trench widens to 5 m and depth increases to 3.6 m. At the west end of Trench 'A' is a squarish pit that may represent the "prospect shaft" mentioned in the Saskatchewan Mineral Deposit Index (SMDI) inventory. The pit opening is 2.4 m by 3.6 m, and is 1.5 m deep with a bottom of coarse broken rock. A wide sheared and intense sulphide stained zone was visible on the trench wall. Slumping of soil and friable rock has occurred along the length of the trench, causing the walls to be undercut and leaving overhangs of vegetation matted soil that could be a fall hazard. Trees in diameter from 3-cm to 12-cm have grown inside and along the sides of the trench and pit.

Trench 'B' is about 35 m long, 5 m wide and 4.6 m to 6 m deep, and dry. A bedrock "step" is located at the east end of the trench near the top of the bedrock ridge. At the west end of the trench are two shallow trenches (2 m wide and 1 m deep) which branch out toward the lake, and which appear to have been for drainage. As at Trench 'A', there has been slumping along the length of Trench 'B', as well as loose blocks of rock that have fallen down. Soil overhangs are present. Trees and scrub have ingrown the trench and along the edges, obscuring the approach to the trench.

Pit 'A' has an opening of 2.1 m by 3.6 m, and is 2.4 m deep. Coarse broken rock forms the bottom of the pit. The pit exposes a shear zone with sulphide staining.

Pit 'B' is a small triangular-shaped excavation into the shoreline bedrock. The pit opening is 1.8 m by 2.1 m by 2.4 m, and is 1.5 m deep. A minor amount of waste rock surrounds the pit.

Pit ‘C’ is the largest excavation, having an opening of approximately 3 m by 4.9 m and a depth of 2.7 m. An intensely sheared and iron-oxide stained mafic rock is exposed, containing several per cent disseminated sulfides. Two of the pit walls are vertical and stable. The third wall shows signs of slumping where the shear is exposed and the fourth is a steep soil slope containing loose pieces of rock. Ephemeral water, to a depth of 30 cm, had accumulated at the bottom of the pit and was frozen. The water level in the pit appears to be above the level of the adjacent lake. No discharge from the pit was observed, although the hydraulic connection may be possible between the pit and adjacent lake.

A water sample from Pit ‘C’ was collected. Analytical results are provided in Table 6.11-1. Field measurements of physical parameters for the water sample were as follows:

Date:	20 October 2002
Time:	12:45 p.m.
pH	7.23
Conductivity:	1230 µS/cm
Temperature:	+ 0.2°C

In addition, the sample water was a pale yellowish-green colour and had a sulphur odour.

The pit water is mineralized with aluminum (1.40 mg/L), arsenic (9.20 µg/L) and to a lesser extent, barium, cobalt, nickel and some major metals including calcium, potassium, magnesium, sodium iron and silicon. The pH in the field was 7.23 which is generally neutral, and 5.77 in the lab which is slightly acidic.

Deep Trenches ‘A’ and ‘B’ and Pits ‘A’ and ‘C’ present fall hazards if walked into blindly. Large wildlife may have difficulty escaping the larger pits. The remaining shallow trenches are not a significant public safety hazard.

6.11.5.3 Waste Rock

Coarse waste rock has been piled along the edges and downslope ends of the trenches and pits. The amount of waste rock is commensurate with, or less than, the volume of rock excavated from the workings. The calculated waste rock volumes at the larger workings are as follows: Trench ‘A’ – 144 m^3; Trench ‘B’ – 875 m^3; Pit ‘A’ – 18 m^3; and Pit ‘C’ – 40 m^3. At Trench ‘B’, the waste rock is a greywacke mineralized with 2 per cent disseminated sulfides. Part of the Trench ‘B’ waste rock pile is visible from the lake. Slopes of the various waste rock piles are low and stable. Scrub vegetation and small trees have encroached onto of the waste rock piles. The low sloped waste rock piles do not appear to present a public safety hazard.

Table 6.11-1
Waverly Mine-North Pit Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	1.40	
Antimony (Sb)	mg/L	<0.01	
Arsenic (As)	ug/L	9.20	0.05
Boron (B)	mg/L	0.120	
Barium (Ba)	mg/L	0.037	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<10	
Cadmium (Cd)	mg/L	0.008	0.001
Cobalt (Co)	mg/L	0.034	
Chromium (Cr)	mg/L	0.019	0.02
Copper (Cu)	mg/L	0.006	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	0.028	0.025
Phosphorous (P)	mg/L	0.520	
Lead (Pb)	mg/L	0.008	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.028	
Strontium (Sr)	mg/L	0.120	
Titanium (Ti)	mg/L	0.004	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	0.004	
Zinc (Zn)	mg/L	0.048	0.05
Total Major Metals			
Calcium (Ca)	mg/L	0.87	
Potassium (K)	mg/L	20.0	
Magnesium (Mg)	mg/L	50.0	
Sodium (Na)	mg/L	2.50	
Iron (Fe)	mg/L	330.0	1
Manganese (Mn)	mg/L	3.20	
Silicon (Si)	mg/L	24.0	
Zirconium (Zr)	mg/L	0.002	
pH	pH Units	5.77	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$)
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$)

6.11.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings production.

6.11.5.5 Debris

Two wooden saw-horses had been left in the bush near Trench 'B'. Otherwise, no additional debris was observed.

6.11.5.6 Site Buildings

No buildings or ruins were observed.

6.11.6 History of Previous Inspections

No record of previous inspections was located.

6.11.7 Risk Assessment Ranking

Public Safety Assessment	9
Environmental Assessment	6.5
Combined Total Assessment	15.5
Ranking	13/26

Some of the workings / waste rock piles are readily visible from the lake, thus increasing the chance of casual visits to the workings. The depth of, and soil overhangs at the trenches present a potential fall-in hazard to visitors. In addition, the downhill approach to Trench 'B' is obscured by forest and appears suddenly. Footing is poor on the soil slope at Pit 'C'. Therefore, 1.5 points were attributed to the "additional public safety risks" category.

Given that accumulated water in Pit 'C' is in contact with intense sulphide mineralization, has a sulphide odour and could possibly be hydraulically connected to adjacent Amisk Lake, 1.5 points were attributed to the "additional environmental risks" category.

6.11.8 Recommended Follow-up

Follow-up activities should be directed at in-filling the deep trenches and Pit ‘C’ which are most likely to found and inspected by casual visitors, such as recreational fishermen and hunters. The existing waste rock can be pushed into the excavations, thereby reducing any potential fall hazard.

Photograph 6.11-1. Waverly Island Site-Prospect Shaft-October 20, 2002.

Photograph 6.11-2. Waverly Island Site-Trench 'B'-October 20, 2002.

Photograph 6.11-3. Waverly Island Site-Shoreline at Pit 'B'-October 20, 2002.

Photograph 6.11-4. Waverly Island Site-Pit 'A'-October 20, 2002.

Photograph 6.11-5. Waverly Island Site-Pit 'B'-October 20, 2002.

Photograph 6.11-6. Waverly Island Site-Pit 'C'-October 20, 2002.

6.12 Sonora Deposit

6.12.1 Location and Access

Site Inspection: 20 October 2002
Location: Map Sheet 63/L9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
Trench 'B' 54° 39' 52" 102° 18' 45" (general site location)	Trench 'B' 6060554 m N 673332 m E (general site location)	Trench 'B' 6060612 m N 673321 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located on a narrow 500 m long island immediately south of Waverly Island, on Amisk Lake. Waverly Island itself is found on the West Channel of the lake and is about 14 km east of the community of Denare Beach. Site access is gained by boat.

The site location is shown in Figure 6.12-1. The site plan is shown in Figure 6.12-2. Photograph Nos. 6.12-1 to 6.12-6 show the site.

6.12.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0094
Property: (formerly: JAKE claim 1; SONORA claim 9; LOT claim 8; BEAVER claim)
Location: Amisk Lake – Sonora Island (south of Waverly Island)
Owner(s): Open – see Section 6.12.4 for previous owners
Commodity: Au **Associated Commodities:** As
Deposit Type: Outcrop

6.12.3 Geology

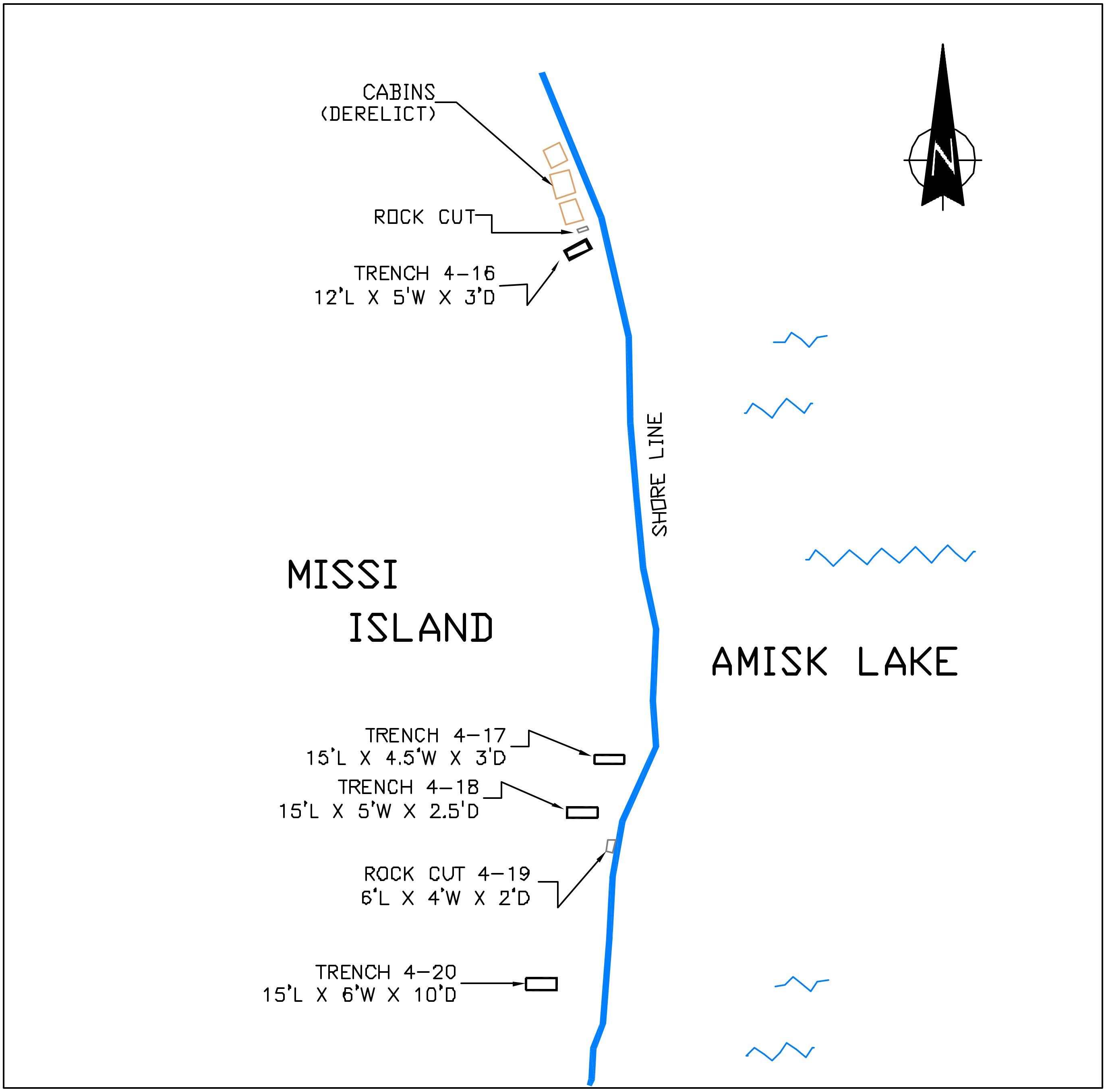
The showing is exposed on the east shore of the second island southwest of Waverly Island in the west channel of Amisk Lake.

The showing, which is classed as a typical mesothermal deposit which is hosted within a 005° trending, 60°to 80°NW dipping, 6.1 to 9.1 m (20 to 30 ft) wide shear which cuts pillowed to massive andesites of the Amisk group. The sheared volcanics are carbonatized and partly

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
SONORA DEPOSIT

CLIFTON ASSOCIATES LTD.   PROJECT NO: R3278   FIGURE NO: 6.12–1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

SONORA MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.12-2**

silicified and the alteration zone contains disseminated pyrite, arsenopyrite, minor chalcopyrite, pyrrhotite and visible gold. Locally, arsenopyrite forms massive lenses 30.4 to 76.2 cm (12 to 30 inches) wide and several feet long. Assays indicate 0.15 to 0.23 oz/ton Au over one to three foot (0.3 to 0.9 m) widths.

Samples were sent to the Department of Mines in Ottawa for analysis in 1934 from rusty, partly decomposed, fine-grained material derived from the weathering of highly jointed and altered quartz-feldspar porphyry. The material was mineralized with stringers of vein quartz and carbonates, as well as disseminated sulphides; sample assays returned values of 0.0625 oz/ton Au.

The test work revealed the surface gold to be extremely fine grained.

6.12.4 Exploration History

In 1914, the showing was within BEAVER claim or LOT claim No. 8. Beaver Lake Gold Mines Ltd. surveyed the claim boundaries.

Between 1935 and 1939, the showing was within SONORA claim No. 9. R. Singbeil completed 1 drill hole and trenching on the showing.

Seven holes, totalling just over 200 ft (61 m), were drilled on the showing during 1935, 1949 and 1950. In 1949, A.L. Parres completed several drill holes and blasted several trenches on the Sonora zone.

Test work revealed the surface gold to be very fine grained and needing an amalgamation extraction. Tonnage was considered to be only high enough to be mineable by a short term 1 to 2 man operation.

In 1954, Byers and Dahlstrom mapped the showing area for the Province of Saskatchewan at a scale of 1 inch to 1 mile.

In 1970, SMDC completed an EM survey over the property. In 1971, J. Jacobson staked the JAKE claim No. 1 to cover the showing. One trench was completed on the showing.

6.12.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.12.5.1 General

The Sonora Deposit site was inspected on 20 October 2002. Site access was by boat, landing at the various mine workings which are visible from the lake. There was a 2-cm thick snow cover over about half of the ground surface.

The mine workings are exposed along the east shore of the island over a distance of 240 m. Three collapsed log cabins are situated alongside the shore at the north end of the island. There was no evidence of recent visitation, but flagging tape at some of the workings suggests exploration-related sampling in the past several years.

Mature conifer forest covers the island, but the area around the workings is relatively open with some birch trees. A low-rising bedrock ridge forms the spine of the island.

6.12.5.2 Mine Workings

Five, short, rock trenches are located on the east side of the island. From north to south, the workings include Trench ‘A’, Trench ‘B’, Trench ‘C’, Trench ‘D’ and Trench ‘E’. The identifiers ‘A’ to ‘E’ are assigned names for this investigation to distinguish the various mine workings.

Trenches ‘A’, ‘B’, ‘C’ and ‘D’ range in length from 2 m to 4.6 m, and nominally are 1.4 m wide and 0.8 m deep. Figure 6.12-2 provides the measured dimensions of each trench. The trenches expose sulphide stained shear zones. All trenches are slightly sloped down toward the lake and were dry. Massive arsenopyrite lenses are exposed in Trench ‘B’ and Trench ‘C’. Slumping of soil and friable rock has occurred along the length of the trenches. Scrub bush, and immature to mature (12-cm diameter) trees have regrown along the trench edges and several trees have encroached inside some trenches. These shallow trenches are not a significant public safety hazard.

Trench ‘E’ is the deepest trench, with a maximum depth of 3 m and shallowing upslope away from the shoreline. This trench is 4.6 m long and about 2 m wide. Exposed is a sulphide stained shear zone with sulphide stringers in the surrounding mafic metavolcanic rock. Slumping of soil and friable rock has occurred along the length of the trench, causing the walls to be significantly undercut and leaving overhangs of vegetation matted soil that could be a fall hazard. Loose in-place rock occurs at the upper edges of the trench walls. Trees in diameter from 3-cm to 12-cm have grown inside and along the sides of the trench.

6.12.5.3 Waste Rock

Small amounts of waste rock have been piled along the edges of, and the toe of the trenches. The amount of waste rock observed appears to be less than the volume of rock expected to have been excavated from the workings. At Trench 'B' cobble to boulder-sized pieces of massive arsenopyrite have been set aside on the shoreline. The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.12.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.12.5.5 Debris

The rusty steel firebox stove and pieces of rusty stove hardware were observed on the ground outside the collapsed cabins. At Trench 'B' there was a 5.5 m long length of rusty steel pipe (5-cm diameter) left on the rocky shoreline. The debris does not appear to present a public safety or environmental hazard.

6.12.5.6 Site Buildings

The dimensions of the three collapsed log cabins are 3.3 m by 3.3 m, 3.6 m by 5.5 m, and 4.8 m by 5.5 m. The walls remain standing, to a height of about 1.2 m, but are stable.

6.12.6 History of Previous Inspections

No record of previous inspections was located.

6.12.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	3
Combined Total Assessment	13.5
Ranking	16/26

The workings are visible from the lake, thus increasing the chance of casual visits. The depth of and soil overhangs at one trench presents a potential fall-in hazard to visitors. Therefore, 1.5 points were attributed to the "additional public safety risks" category. Given the likely hydraulic connection to the Lake, 1.5 points was attributed to "additional environmental risks".

6.12.8 Recommended Follow-up

Except for Trench 'E', the other trenches and cabins do not require any follow up from a public safety perspective. The upper edges of Trench 'E' could be considered for slope reduction to reduce the fall hazard, should other remedial work be carried at other sites in the general area. The minor amount of debris could also be removed at the same time. The stockpile of massive arsenopyrite rock could be left as is.

Photograph 6.12-1. Sonora Deposit-Trench 'C'-October 20. 2002.

Photograph 6.12-2. Sonora Deposit-Trench 'E'-October 20. 2002.

Photograph 6.12-3. Sonora Deposit-Collapsed Cabin-October 20, 2002.

Photograph 6.12-4. Sonora Deposit-Area of Shoreline Trenches-October 20, 2002.

Photograph 6.12-5. Sonora Deposit-Trench 'A'-October 20, 2002.

Photograph 6.12-6. Sonora Deposit-Trench 'B'-October 20, 2002.

6.13 SYE/Sunset Exploration Shaft

6.13.1 Location and Access

Site Inspection: 21 October 2002
Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 43' 23" lat 102^{o} 05' 25" long	6067644 m N 687390 m E	6067606 m N 687348 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located between Comeback Bay (on Amisk Lake) and Wolverine Lake, on the northern side of a broad gently sloping hill. From the Town of Creighton, the site is situated 12 km to the west. From the Community of Denare Beach on Amisk Lake, the site is 7 km to the north. The site is accessible by boat via: (1) Wolverine Lake (entering through Amisk Lake), followed by a 500 m walk to the site; or, (2) Mosher Lake, followed by a 1.5 km walk to the site.

The site location is shown in Figure 6.13.1. The site plan is shown in Figure 6.13-2. Photograph Nos. 6.13-1 to 6.13-3 show the site.

6.13.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0096
Property: ML 5262 (formerly: LEE claims; SUNSET claims; SYE claims)

Location: Wolverine Lake – southeast of
Owner(s): Open - see Section 6.14.4 for previous owners
Commodity: Au **Associated Commodities:** Py; AS
Deposit Type: Adit or Shaft

6.13.3 Geology

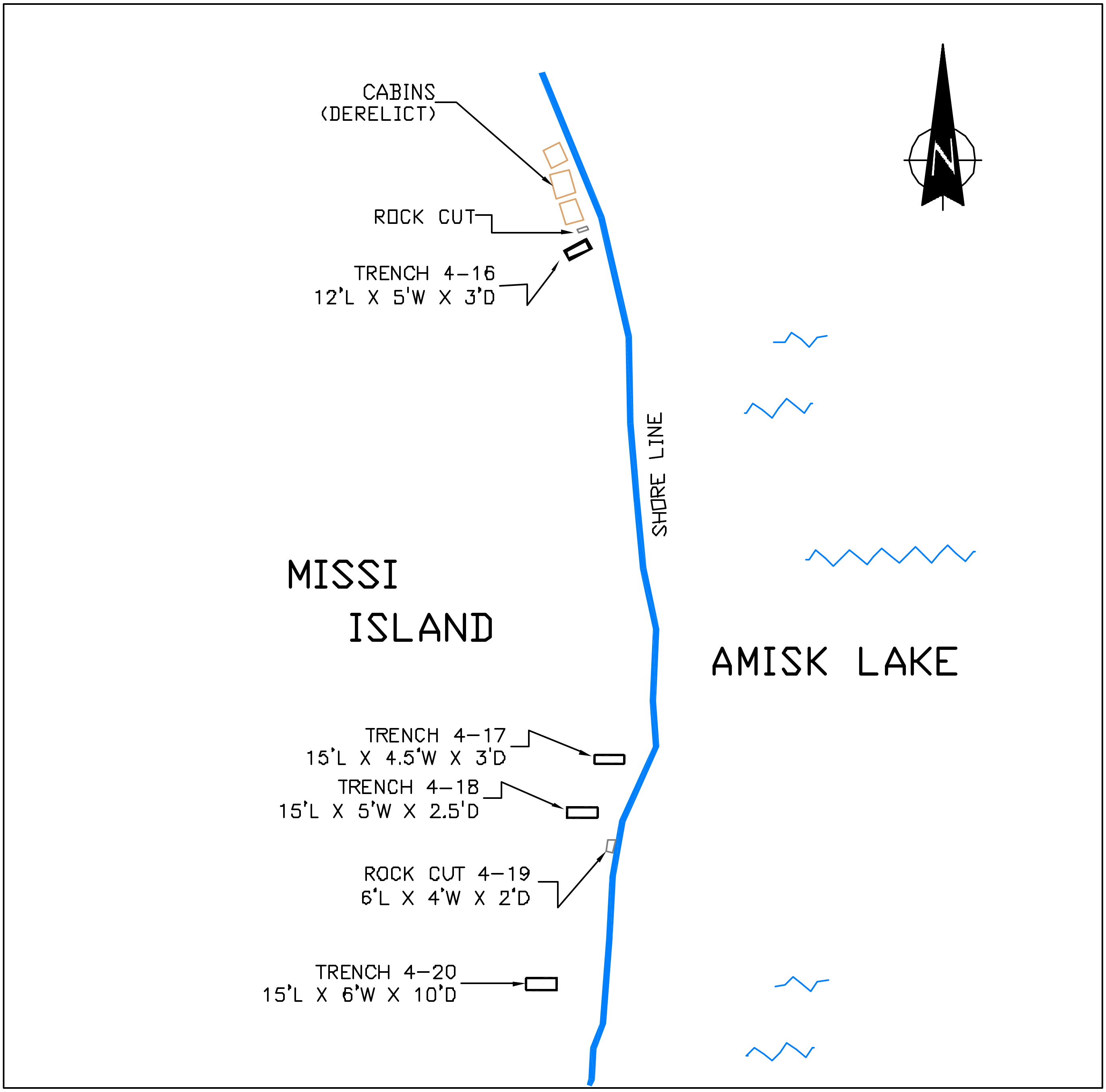
The showing is located 396.2 m (1,300 ft) east of the south end of Wolverine Lake.

The main SYE Gold Showing occurs in a 1.5 to 2.1 m (5 to 7 ft) wide shear zone hosted by carbonatized andesites of the Amisk Group. The shear zone contains quartz veinlets, which are up to eight inches wide, and form 50% of the vein material. The vein reportedly contains visible gold as well as pyrite and arsenopyrite.

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
SONORA DEPOSIT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.12–1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

SONORA MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.12–2**

In 1985, SMDC completed two drill holes on the SYE grid showing.

6.13.4 Exploration History

The area of the showing was first staked as the SYE claims in 1931. Exploration in 1936 uncovered a small quartz body containing abundant free gold. Several trenches, rock cuts, and a 6.1 m (20 ft) prospect shaft were put down on the showing. Assays indicated a value of $1,000/ton for the deposit.

Further trenching was reported in 1958 when the SUNSET (S-6220) claim, owned by A. E. Gray, covered the area

Further trenching was reported during the 1963-1975 period on the LEE 1-6 claims, held by R. McKenzie and later the Beaver Lake Mining Co., over the area

By 1982, the LEE claims had converted to ML 5262. Beaver Lake Mining Co. completed 3 trenches on the showing. No assay values were given. In 1984, A. Parres detail mapped, prospected and sampled the showing, now named the Zone 1 Showing, for Ron Brown. Grab samples returned up to 0.110 ppm Au, 0.1 ppm Ag, 160 ppm Cu and 10.6 ppm As.

In 1985, SMDC completed ground VLF-EM, magnetic and Induced Polarization (IP) surveys over grid 4-85 on ML 5262. In the same summer, SMDC completed a poplar leaf biogeochemical survey over grid 4-85. Drill holes AL5-20 and 21 were competed to test IP and biogeochemical anomalies.

In the summer of 1986, SMDC completed detailed geological mapping of SYE grid. In the summer of 1987, SMDC completed a soil sample survey over the SYE grid. The only anomalous values were returned from a pinpoint source over the showing.

6.13.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.13.5.1 General

The SYE/Sunset Exploration Shaft site was inspected on 21 October 2002. There was a 2-cm thick snow cover over the entire ground surface. The channel between Comeback Bay and Wolverine Lake was frozen, which prevented boat passage. Access to the site was therefore achieved by walking 1 km through the bush starting from the east shore of Comeback Bay.

The site was located on the north side of a gently sloping broad outcrop ridge about 7 m high. Two sets of workings, consisting of rock trenches and pits, were found. There was no evidence of recent visitation, but flagging tape at some of the workings suggests exploration-related sampling in the past several years.

Forest vegetation was mainly mature birch (15-cm to 25-cm diameter), with some pine. The forest cover was relatively open in the area of the workings, becoming dense approaching the surrounding spruce forest.

6.13.5.2 Mine Workings

The main set of workings consisted of a series of rock trenches extending a distance of 140 m in a northeast direction. Trench dimensions were variable, ranging in length from 4.6 m to 16.8 m and in width from 1 m to 2.4 m, and typically 1.2 m deep. The trench walls were solid and stable. Trench bottoms appeared to be dry, although precipitation and snow melt waters could seasonally accumulate. Trench ‘H’ was the largest working. It exposes a sulphide stained shear zone with quartz vein, and appears to follow the northeasterly strike of the showing. The south end of Trench ‘H’ was 2.4 m deep, with the rest of the trench being 1 m deep and partially infilled with waste rock. Generally, the trenches were ingrown with scrub bush, and small conifers and immature poplar trees (less than 8-cm diameter).

According to the Saskatchewan Mineral Deposit Index (SMDI) inventory, a 6.1 m deep prospect shaft was put down in the 1930s, in addition to trenches. A search of the site did not reveal such a shaft, but the size of Trench ‘H’ suggests that this trench may have been the shaft location.

A subsidiary set of workings, located 50 m west of the main series, consisted of three small shallow rock pits. These pits had a typical dimension of 1.5 m by 1.5 m and depth of 1 m.

The relatively shallow trenches and pits are not a significant public safety hazard. Hazard to wildlife is low, since animals would be able to escape the trenches.

6.13.5.3 Waste Rock

Small amounts of coarse waste rock were observed alongside some of the various rock trenches. The volume of rock appears to be equal to the size of the excavation. Waste rock that was visible appeared to be unmineralized. Scrub bush has regrown on parts of some of the waste rock pile. The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.13.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced

6.13.5.5 Debris

At Trench 'H' there was a small rusty steel box (15-cm x 30-cm square). A rusted 32-litre steel barrel and food can were seen near a collapsed cabin (see below). The debris does not appear to present a public safety or environmental hazard.

6.13.5.6 Site Buildings

A collapsed log cabin (3.6 m x 4.9 m) was located near the north end of the main workings. The log walls were about 1.4 m high and stable.

6.13.6 History of Previous Inspections

No record of previous inspections was located.

6.13.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	1.5
Combined Total Assessment	11.5
Ranking	21/26

6.13.8 Recommended Follow-up

No follow-up work is required for this site. Given the remoteness and difficulty in accessing the site, it is anticipated there will be minimal people visiting the site. The trenches and pits are relatively shallow and easily recognized when approached, and public safety is therefore not a concern. The excavations appear to be free of accumulated water and excavated rock appears to be generally unmineralized, thus environmental concerns are minimal.

Photograph 6.13-1. SYE/Sunset Exploration Site-Trench 'D'-October 21, 2002.

Photograph 6.13-2. SYE/Sunset Exploration Site-Trench-Delapidated Building-October 21, 2002.

Photograph 6.13-1. SYE/Sunset Exploration Site-Panoramic View of 'A' and 'B' Trenches -October 21, 2002.

6.14 Star Occurrence

6.14.1 Location and Access

Site Inspection: 21 October 2002
Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 43’ 37” lat 102^{o} 04’ 00” long	6068140 m N 688892 m E	6068129 m N 688803 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 1 km north-northeast of the north end of Mosher Lake, near the top of a 35 m high hill. From the Town of Creighton, the site is situated 10.5 km to the west, and from the Community of Denare Beach on Amisk Lake, the site is 8 km to the north. The site is accessible by boat via Mosher Lake, followed by a 1.5 km walk to the site.

The site location is shown in Figure 6.14-1. Photograph No. 6.14-1 shows a small pit found at the site.

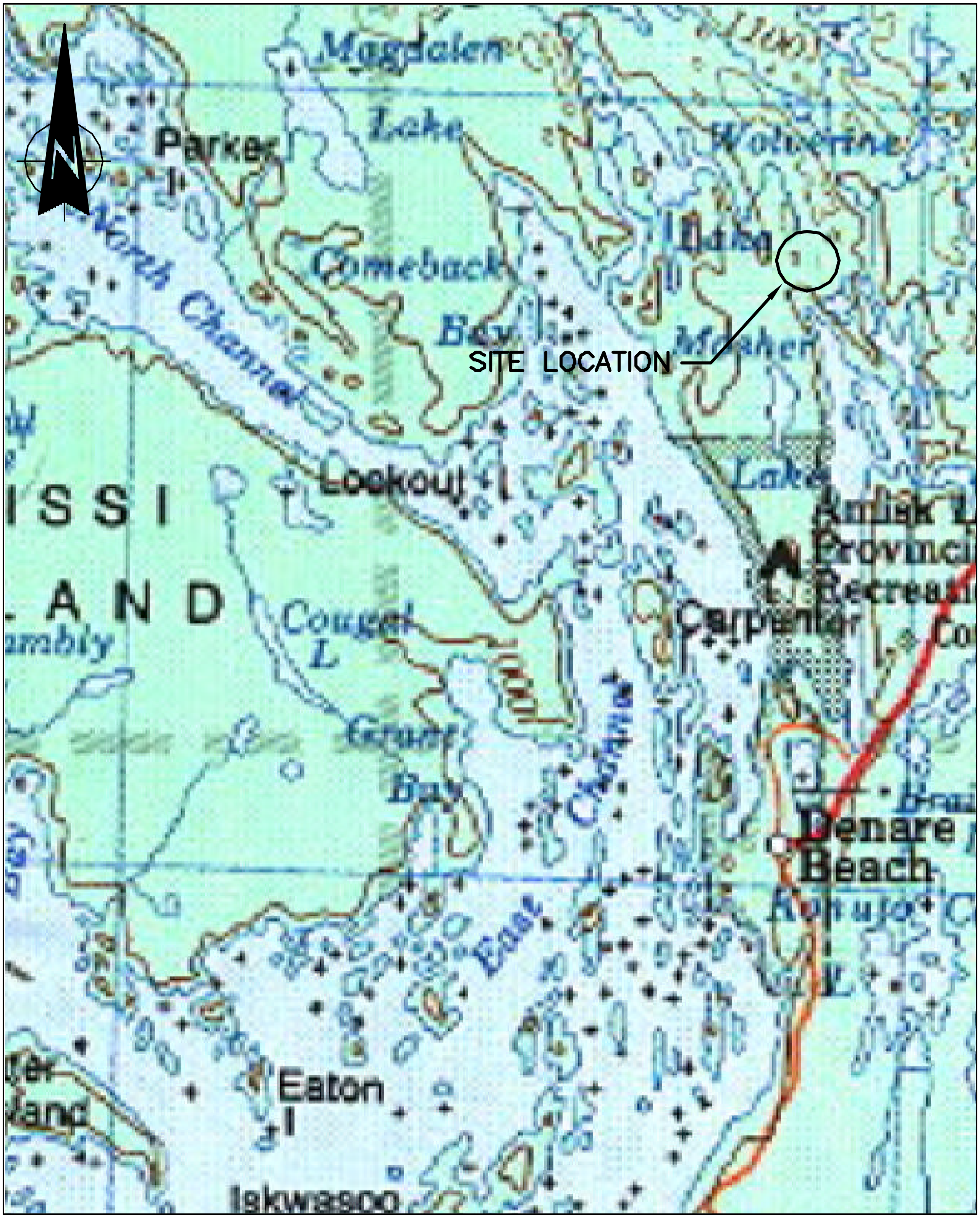
6.14.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0165
Property: TEA-REX-STAR Claims Drill Holes
Location: Wolverine Lake – Mosher Lake area
Owner(s): Open - see Section 6.14.4 for previous owners
Commodity: Py **Associated Commodities:** Au
Deposit Type: Drillhole

6.14.3 Geology

The showing consists of a series of drill holes completed on five northwest-trending conductor zones between Wolverine and Mosher Lakes.

The drill holes intersected Amisk Group sheared andesite, dacite, rhyolite and diabase, cut by diorite and stringers of quartz and carbonate. Mineralization consisted of minor thin bands of massive pyrrhotite-pyrite, and more commonly, disseminated pyrrhotite-pyrite. Assay results can be obtained from Saskatchewan Industry and Resources.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
STAR OCCURANCE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.14-1

The drill holes intersected chloritized and sheared Amisk Group andesites, tuffaceous andesite and rhyolite, dacite, and derived quartz-biotite schist, and quartz-chlorite schist. This sequence of rocks has been intruded by diorite and by minor feldspar porphyry.

Near solid pyrrhotite mineralization and stringer-type pyrite-pyrrhotite mineralization occurs in all of the volcanic rock types. The intrusive diorite hosts disseminated pyrite-chalcopyrite mineralization.

6.14.4 Exploration History

In 1952, the Hudson Bay Exploration and Development Co. Ltd. diamond drilled 9 holes over the conductive zones listed above. Development work consists of diamond drilling and several electromagnetic and magnetic ground surveys.

By 1978, the showing was within CBS 3066. Granges Exploration completed an EM survey and 15 regional follow-up anomaly holes.

6.14.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.14.5.1 General

The Star Occurrence site was inspected on 21 October 2002. There was a 2-cm thick snow cover over 50 per cent of the ground surface. Site access was by boat on Amisk Lake to the Comeback Bay shoreline, and then a 2.5 km long walk northeast through the bush to the site. Alternate boat access from Mosher Lake could not be attempted since the lake at the south-end boat launch was frozen.

The general site area (location as per Saskatchewan Mineral Deposit Index (SMDI) geographic coordinates) was on the south slope of a broad hummocky hill with open forest cover. Forest vegetation was mostly mature conifer trees (15-cm to 25-cm diameter) with some poplar and birch.

According to the SMDI inventory, past activity at the site was limited to exploration drilling. An examination of the general area of the site did not reveal evidence of past drill roads or drill pads. Only a single shallow pit was found; possibly from past prospecting activity. There was no evidence of recent visitation.

6.14.5.2 Mine Workings

A single, small shallow pit was located, with dimensions of 1 m x 1.2 m and a depth of 0.6 m. The pit exposes a 30-cm wide gray cherty-quartz vein with 2 percent pyrite and sulphide staining.

6.14.5.3 Waste Rock

No waste rock was observed.

6.14.5.4 Tailings

No tailings were observed. Furthermore, activities at the site only involved exploratory diamond-drilling, and therefore no mill was constructed which would have resulted in tailings being produced.

6.14.5.5 Debris

No debris was observed.

6.14.5.6 Site Buildings

No buildings or ruins were present at the site.

6.14.6 History of Previous Inspections

No records of previous inspections was located.

6.14.7 Risk Assessment Ranking

Public Safety Assessment	6
Environmental Assessment	1
Combined Total Assessment	7
Ranking	25/26

6.14.8 Recommended Follow-up

No follow-up work is required for this site. Given the remoteness and difficulty in accessing the site, it is likely there will be minimal people visiting the site. Furthermore, there was only one shallow small pit that poses no safety hazard.

Photograph 6.14-1. Star Occurrence-General View (Small Pit is Near Orange Marker)-October 21, 2002

6.15 Amisk Syndicate Mine

6.15.1 Location and Access

Site Inspection: 21 October 2002

Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 42' 40" lat 102° 06' 10" long	6066282 m N 686640 m E	6066373 m N 686585 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located on the east shore of Comeback Bay near the northeast end of Amisk Lake, 6 km north of the community of Denare Beach. The site is readily accessible by boat or snowmobile, depending on the season.

The general site location is shown in Figure 6.15.1. The site plan is shown in Figure 6.15-2. Photograph Nos. 6.15-1 to 6.15-5 show the site.

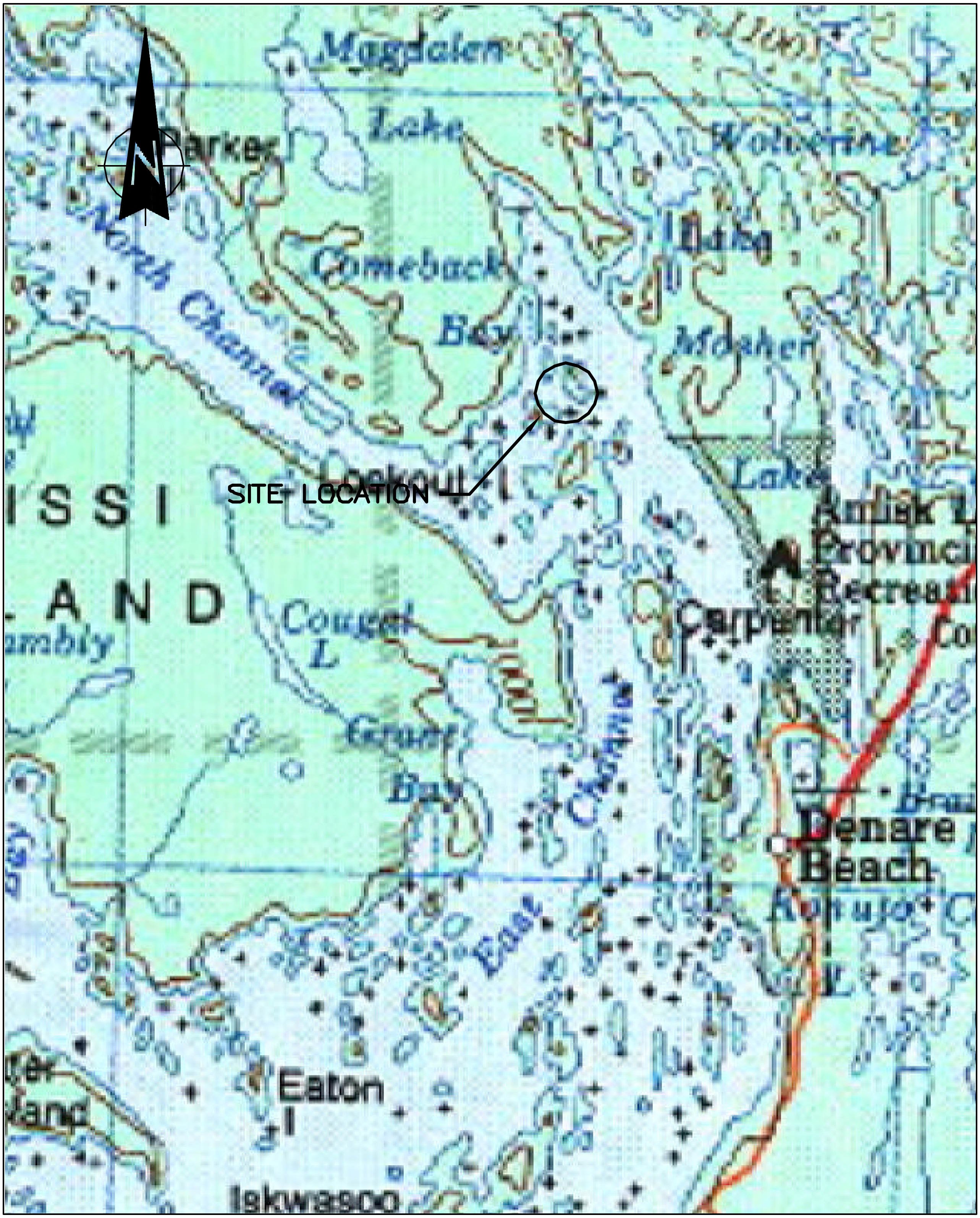
6.15.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0104
Property: (formerly: CBS 3804; S-95970; EVELYN claim No. 1; SUNRISE claim)
Location: Amisk Lake – Comeback Bay
Owner(s): Open – see Section 6.15.4 for previous owners
Commodity: Au **Associated Commodities:** An
Deposit Type: Outcrop

6.15.3 Geology

The showing, also known as the Amisk Syndicate Property, is located on a north-trending rocky ridge on the east shore of Comeback Bay 0.75 miles (1.2 km) south of the entrance to the bay leading to Wolverine Lake.

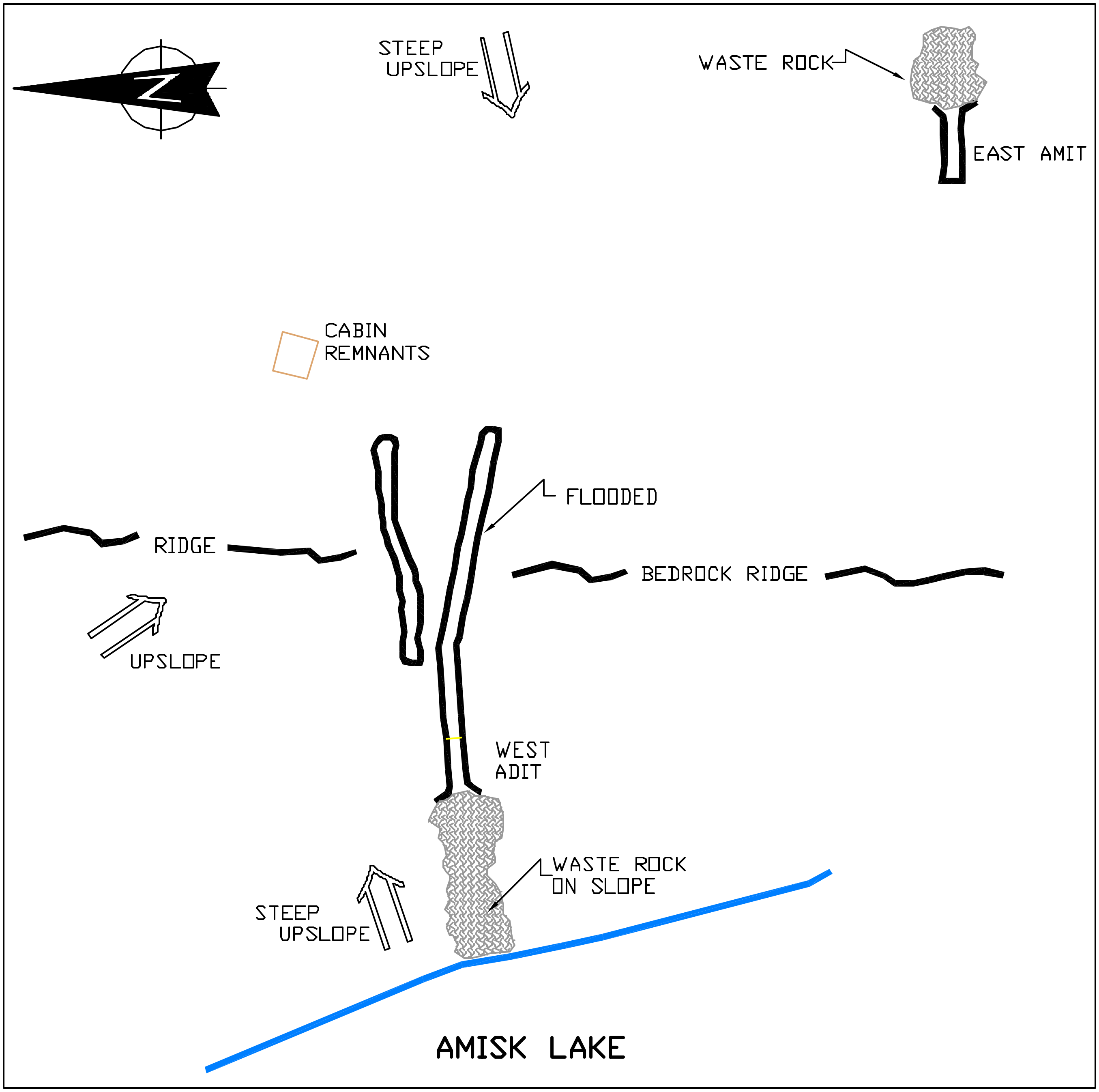
The general geology of the Amisk Gold Syndicate Showing consists of a layered series of northwest striking, near vertical to vertical dipping massive and fragmental volcanics.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
AMISK SYNDICATE MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.15-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

AMISK SYNDICATE MINE SITE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.15–2

The showing, which is exposed in several pits and trenches, one 12.2 m (40 ft) adit and a second short adit of unknown length, consists of disseminated pyrite, arsenopyrite and ankerite mineralization occurring in discontinuous veins, lenses and stringers of quartz which form irregular zones 0.9 m (2.8 ft) wide and up to 32 m (105 ft) long. The mineralization is associated with a 15.2 to 121.9 m (50 to 400 ft) wide, N20 to 30°E striking, vertically dipping, zone of weak shearing that cuts Amisk Group lapilli basalts and pyroclastic rocks, intruded by diorite and feldspar porphyry. Grab samples indicate gold values are contained mainly in the quartz, although no free gold is visible.

In the summer of 1986, SMDC grab and chip sampled some of the trenches that expose the showing. The results can be obtained from Saskatchewan Industry and Resources:

In 1986, SMDC completed 4 drill holes on the showing. The holes intersected the same rock units and mineralization encountered at the surface. Drill hole AL6-70, which was drilled under the main surface showing, encountered a quartz-ankerite stockwork zone that hosts spots of pyrite and arsenopyrite. The best value encountered in this stockwork was 0.056 oz/ton Au over 0.5 m. The rest of the holes returned very low to trace amounts of gold.

6.15.4 Exploration History

The showing was staked by J. Hayes in 1928. The claims lapsed in 1949 and were later restaked as the SUNRISE (S-6210) mineral claim by A. E. Gray. Development consisted of several pits and trenches, a 12.2 m (40 ft) adit just above the shoreline, and an adit on the east side of the ridge

Between 1963 and 1964, R. Mackenzie staked the showing as EVELYN claim No. 1. Two trenches were completed southeast of the adit near the east and south boundaries of the claim.

On 1 June 1984, Ron Smith staked the showing as the PEN claim or S-95970. In the same year, A. Parres completed trench and adit sampling, detailed mapping and prospecting over the immediate showing area, now referred to as Zone 2, for Ron Smith (AF 63L09-0323). Grab samples returned up to 0.41 ppm Au, 0.1 ppm Ag, 328 ppm Cu, 282 ppm Zn and 2,600 ppm As.

By the summer of 1986, the showing was within S-95970. SMDC completed detailed mapping of the showing, sampled the existing trenches and completed drill holes AL6-69 to 73 on the main showing near the adit. The results of this work are given above. The claim eventually lapsed.

On 01 November 1995, Claude Resources Inc. staked the showing as CBS 3804. In 1998, ground VLF-EM and magnetic surveys were completed over the showing (AF 63L09-0430). The claim lapsed 01 May 2000.

6.15.5 2002 Inspection-Site Description

6.15.5.1 General

The Amisk Syndicate Mine site was inspected on 21 October 2002. There was a 2-cm thick snow cover over 80 per cent of the ground surface except along the west side of the ridge which was barren of snow. Access to the site was gained by boat, launched from Denare Beach.

The site is situated on a 15 m high, steeply sloped, bedrock ridge that is sparsely forested with birch and pine. From the lake, the West Adit workings and waste rock pile are readily visible. The East Adit is located on the east side of the ridge approximately 100 m from the shoreline. Both of the rockcut entrances to each adit are obscured by vegetation and appear suddenly when approached downslope, with a 4 m fall to the adit portal.

There is evidence of recent visitation at the West Adit including parts of a fishing rod and food-package wrappings. At the East Adit there was no evidence of recent visitation.

6.15.5.2 Mine Workings

Mine workings consist of two adits and a shallow long trench. The adits are 100 m apart, on either side of a 15 m high bedrock ridge.

The West Adit occurs on the west side of the ridge, about 6m above the lake shoreline. A rock cut (1.2 m wide and 4m long) into the bedrock, forms the entrance to the adit opening. The adit opening itself is 1.2 m wide and 1.4 m high, slopes slightly downward to the east, and is easily entered. The adit is 30 m long, with the east half flooded with water to a depth of about 0.6 m. The water level in the adit is well above the adjacent lake. No external discharge from the adit was observed. Overall rock stability is good, but loose boulders and soil occur above the opening and fallen rock has accumulated at the adit entrance. Inside the adit, loose rock was visible on the back (ceiling) and has also fallen onto the floor. The West Adit presents a public safety hazard, if entered or approached blindly from the upslope side.

A water sample from the West Adit was collected at the edge of the pooled water. Analytical results are provided in Table 6.15-1. Field measurements of physical parameters for the water sample were as follows:

Date:	21 October 2002
Time:	3:00 p.m.
pH	8.81(not stable during measurement)
Conductivity:	54 µS/cm
Temperature:	+ 1.2°C

The west adit water has modest mineralization of arsenic (53 µg/L) and calcium.

The East Adit is on the east side of the ridge, and 100 m southeast of the West Adit. A rock cut (1.8 m wide and 4 m long) into the bedrock forms the entrance to the adit opening. Waste rock and/or loose fallen rock has accumulated at the opening, effectively blocking any access into the adit. The rock slope at and above the entrance is stable but loose sheared rock was evident. Rock at the entrance is strongly sheared with intense sulphide and limonite staining. Standing water was evident in the adit, and was 0.7 m deep at the adit entrance. No external discharge from the adit was observed. The East Adit presents a sudden fall hazard, if approached blindly from the upslope side.

A water sample from the East Adit was collected at the portal. The ice surface was broken and the disturbed sediment was allowed to settle for 15 minutes prior to sampling. A strong sulphide odour was present and the water had a pale yellow color. Analytical results are provided in Table 6.15-1. Field measurements of physical parameters for the water sample were as follows:

Date:	21 October 2002
Time:	4:30 p.m.
pH	7.71
Conductivity:	358 µS/cm
Temperature:	+ 2.3°C

The adit water is mineralized in aluminum (0.23 mg/L), arsenic (130 µg/L), phosphorous (0.210 mg/L) and some major metals including calcium, potassium, magnesium and iron.

Table 6.15-1
Amisk Syndicate-East and West Adit Water Quality

Parameter	Units	Result		SSWQO (1)
		West Adit	East Adit	
Total Trace Metals				
Aluminum (Al)	mg/L	<0.005	0.230	
Antimony (Sb)	mg/L	<0.001	<0.001	
Arsenic (As)	ug/L	53	130.0	0.05
Boron (B)	mg/L	<0.002	0.019	
Barium (Ba)	mg/L	0.001	0.005	1
Beryllium (Be)	mg/L	<0.001	<0.001	
Bismuth (Bi)	ug/L	<1	<1	
Cadmium (Cd)	mg/L	<0.001	<0.001	0.001
Cobalt (Co)	mg/L	<0.001	0.008	
Chromium (Cr)	mg/L	<0.001	0.020	0.02
Copper (Cu)	mg/L	<0.001	0.010	0.01
Molybdenum (Mo)	mg/L	<0.001	<0.001	
Nickel (Ni) (4)	mg/L	<0.001	0.008	0.025
Phosphorous (P)	mg/L	<0.01	0.210	
Lead (Pb)	mg/L	<0.002	<0.002	0.02
Selenium (Se)	mg/L	<0.001	<0.001	0.01
Silver (Ag)	mg/L	<0.001	<0.001	0.01
Tin (Sn)	mg/L	0.006	0.008	
Strontium (Sr)	mg/L	0.03	0.072	
Titanium (Ti)	mg/L	<0.001	<0.001	
Thallium (Th)	mg/L	<0.01	<0.01	
Vanadium (V)	mg/L	<0.001	<0.001	
Zinc (Zn)	mg/L	<0.005	0.047	0.05
Total Major Metals				
Calcium (Ca)	mg/L	48	40.00	
Potassium (K)	mg/L	<0.2	5.70	
Magnesium (Mg)	mg/L	2.5	14.00	
Sodium (Na)	mg/L	<0.5	0.800	
Iron (Fe)	mg/L	0.076	14.00	1
Manganese (Mn)	mg/L	0.003	0.600	
Silicon (Si)	mg/L	0.52	7.90	
Zirconium (Zr)	mg/L	<0.001	<0.001	
pH	pH Units	7.83	6.08	
Radionuclides				
Uranium (U)	n/a	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	n/a	
Polonium-210	n/a	n/a	n/a	
Radium-226	n/a	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$)
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$)

A narrow long and shallow trench (dimensions: 0.7 m wide x 17 m long x 0.4 m deep) crosses the top of the bedrock ridge in a zigzag manner.

Small conifers and scrub bush is growing alongside the adit entrance rock cuts. Mature conifers (12-cm diameter) grow at the edge of the East Adit. Birch trees and scrub bush are common at the top of the ridge where the shallow trench is located.

6.15.5.3 Waste Rock

Small waste rock piles are associated with each adit, and are deposited on the steep rocky slopes. Both piles are generally stable. Although steep, the waste rock piles do not present a significant public safety hazard.

At the West Adit, the waste rock pile is about 6 m long by 2.5 m (crest) to 8 m (toe) wide and 1 m deep. The estimated volume of waste rock is about 48 m^3. The slope (facing Comeback Bay) was 40 degrees. The pile extends from the rockcut entrance downslope to the edge of the lake. The pile consists of finely crushed (less than 0.5 cm) and pebble sized pieces of a carbonate altered chlorite schist showing brown staining. Birch trees encroached onto the sides of the waste rock pile, but there was no vegetation on the surface. Precipitation runoff across the pile would be direct into the lake, and thus present an environmental hazard.

A sample of the west waste rock pile was collected for analyses. Results are presented in Table 6.15-2. The rock is heavily mineralized in iron, magnesium, calcium, aluminum, manganese, potassium and phosphorous. The rock is highly acid consuming in nature.

At the East Adit, the waste rock pile 5.5 m long by 3.6 m wide and 1 m deep. The estimated volume of waste rock is 20 m^3. Trees and alder bush grow on the sides and surface of the waste rock pile.

6.15.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

Table 6.15-2

Amisk Syndicate No. 2 West Adit Waste Rock

Parameter	Units	Result
Al2O3	%	
Iron	ppm	248,000
Fe2O3		
CaO	%	
Magnesium	%	14,600
MgO	ppm	
K2O	%	
Sodium	ppm	120
Na2O	%	
Calcium	ppm	24,700
Nickel	ppm	26
Lead	ppm	11
Arsenic	ppm	5,000
Aluminum	ppm	21,500
Gold	ppm	
Silver	ppm	<0.5
Mercury	ppm	
P2O5	%	
Zinc	ppm	100
Cadmium	ppm	11
Cobalt	ppm	130
Molybdenum	ppm	<0.5
Manganese	ppm	4,000
MnO %	%	
Chromium	ppm	56
Potassium	ppm	1,700
Vanadium	ppm	37
Boron	ppm	<1
Barium	ppm	45
Beryllium	ppm	
Copper	ppm	160
Titanium	ppm	450
TiO2 %	%	
Zirconium	ppm	7.3
Yttrium	ppm	
Lanthanum	ppm	
Thorium	ppm	
Strontium	ppm	27
Phosphorous ppm	ppm	1,500
Sulphate, Acid Soluble (%)	%	0.28
Sulphide ppm	ppm	16,000
Sulphur (%)	%	1.69
Acid Neut g $CaCO_3$/kg	g CaCO3/kg	77.7
Acid Producing g $CaCO_3$/kg	g CaCO3/kg	50
Net Acid Generation	g CaCO3/kg	-27.7
pH, Paste pH units	pH units	7.79

6.15.5.5 Debris

No debris was observed on the site, outside of the adits.

6.15.5.6 Site Buildings

An old log foundation-frame (3.6 m x 4.2 m), which may have been the base for a cabin or diamond-drill set-up, was located at the east end of the site.

6.15.6 History of Previous Inspections

No records of previous inspections was located.

6.15.7 Risk Assessment Ranking

Public Safety Assessment	13.5
Environmental Assessment	9.5
Combined Total Assessment	23
Ranking	3/26

The Amisk Syndicate Mine site contains several public safety hazards including access into the West Adit, potential access into the East Adit, loose rock at the opening of and inside the West Adit, and steep slopes above the two adits. Based on information from local residents, the West Adit is used as a recreational swimming area. Therefore three points were attributed to the “additional public safety risks’ category.

Given; (a) the presence of standing water in the two adits; (b) a strong sulphide odour in the East Adit water; and (c) the possibility that accumulated adit water could seep through rock fractures into adjacent Amisk Lake, a total of 2.5 points attributed to the “additional environmental risks” category.

6.15.8 Recommended Follow-up

Follow-up work is required at the site to seal the openings to the two adits, either by blasting down the entrance way rocks or placement of a concrete seal over the openings. Blasting would also reduce the vertical wall heights, lessening risk of a fall hazard. Hazard warning placards should be posted should reclamation activity be delayed.

The waste rock could likely be left as is, because adit water quality is neutral suggesting the host rock (waste rock) is non-acid producing.

Photograph 6.15-1. Amisk Syndicate Mine-East Adit Area-October 21, 2002.

Photograph 6.15-2. Amisk Syndicate Mine-Partially Flooded Interior of West Adit-October 21, 2002.

Photograph 6.15-3. Amisk Syndicate Mine-West Adit and Waste Rock Pile-October 21, 2002.

Photograph 6.15-4. Amisk Syndicate Mine-West Adit Portal-October 21. 2002.

Photograph 6.15-5. Amisk Syndicate Mine-Interior of West Adit-October 21. 2002.

6.16 Hannay (Bessie Island) Deposit

6.16.1 Location and Access

Site Inspection: 22 October 2002
Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 40’ 15” lat 102° 17’ 17” long	6061325 m N 674881m E	6061678 m N 674592 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located on the west side of Missi Island, on Amisk Lake, 13 km west of the community of Denare Beach. Specifically, the workings are found on the west side of Hannay Bay at the end of a rock ridge on the peninsula that separates Hannay Bay from the West Channel of Amisk Lake. Site access is gained by boat.

The site location is shown in Figure 6.16-1. The site plan is shown in Figure 6.16-2. Photograph Nos. 6.16-1 to 6.16-3 show the site.

6.16.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 2200
Property: CBS 3235
Location: Amisk Lake – west shore Hannay Bay
Owner(s): SMDC
Commodity: Zn **Associated Commodities:** Pb; Cu; Au
Deposit Type: Trench

6.16.3 Geology

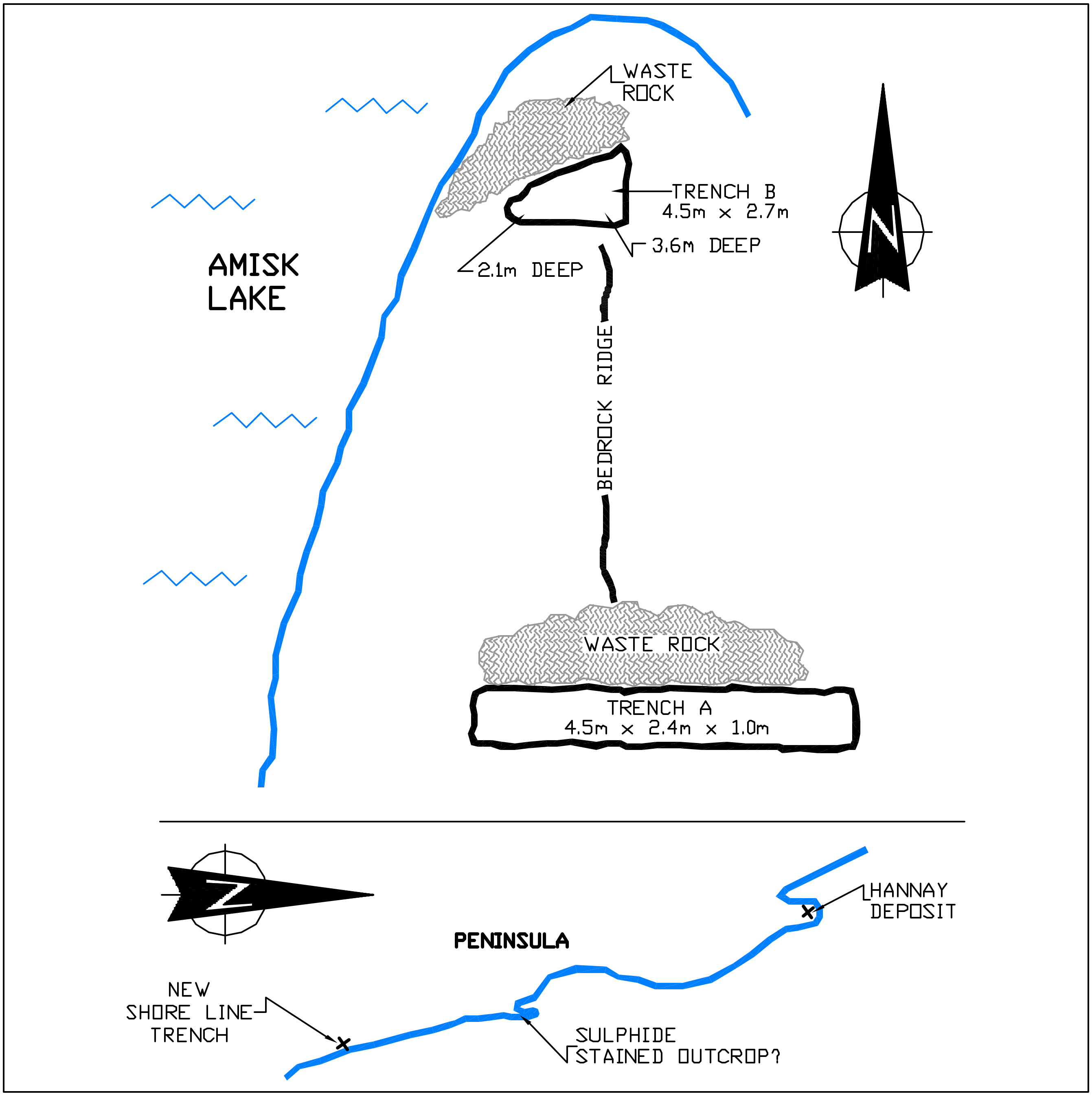
The showing consists of a single trench located half way up the west shore of Hannay Bay on the west side of Missi Island. The trench, which is located at grid 1-83 coordinates 9+40S and 3+80W, is the result of previous gold prospecting.

The showing is found within mineralized Amisk Group brecciated quartz porphyritic rhyolite and brecciated porphyritic dacites which are part of the JMB porphyry dome complex. The dacite hosts a massive pyrite band that contains associated minor chalcopyrite, sphalerite and

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 L.

SITE LOCATION PLAN
HANNAY (BESSIE ISLAND) DEPOSIT

CLIFTON ASSOCIATES LTD. | PROJECT NO: R3278 | FIGURE NO: 6.16–1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

HANNAH (BESSIE ISLAND) DEPOSIT – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.16-2**

galena. The dacite also contains horizons of disseminated pyrite, sphalerite, galena and chalcopyrite. Assay results can be obtained from Saskatchewan Industry and Resources.

Mapping by Cameco concluded that the showing rhyolites are generally less quartz porphyritic than the Laurel Lake-Gull Island rhyolite. Both rhyolites in all other respects, including an identical carbonate-sericite alteration and a low magnetic expression, are identical

6.16.4 Exploration History

The area of the showing was mapped in 1954 by A.R. Byers and C.D.A. Dahlstrom for the Saskatchewan Geological Survey. L. S. Beck investigated the showing in 1959 for the Saskatchewan Geological Survey.

The area was remapped in 1971 by the Geological Survey of Canada.

By 1983, the showing area was within CBS 3235. SMDC completed ground EM and magnetic surveys and detailed geological mapping. The trench that constitutes this showing was re-discovered and channel sampled (AF 63L09-0279). The results of this sampling are given above.

6.16.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.16.5.1 General

The Hannay Deposit site was inspected on 22 October 2002. Site access was by boat, landing at the workings that are located beside the shoreline. There was a patchy 2-cm thick snow cover over about half of the ground surface.

The mine workings are on the west side of a 5 m high bedrock ridge that is moderately forested with pine, spruce and some birch. From the lake, the workings and waste rock pile are readily visible and easy to locate. There was no evidence of recent visitation.

6.16.5.2 Mine Workings

Mine workings consist of two rock trenches, 20 m apart. The deeper Trench ‘A’ is at the tip of the rock ridge in an open area, whereas the shallow Trench ‘B’ is slightly obscured by forest.

Trench 'A' is roughly triangular in shape, and open to the north and west toward the lake. The trench is 4.6 m long, 2.7 m at its widest, with the backwall (the bedrock ridge) rising 2.1 m to 3.6 m above the trench bottom. The trench opening is about 1.5 m above the adjacent lake surface. A 2.1 m wide shear zone with intense sulphide staining, is exposed. The trench walls are solid and stable, however, there are loose slabs of sheared rock at the top edge of the backwall. Scrub bush grows around the trench edge.

In Trench 'A', ice had accumulated to a depth of 0.7 m. The ice level appears to be at lake level. The ice was broken and a water sample was collected from Trench 'A'. Analytical results are provided in Table 6.16-1. Field measurements of physical parameters for the water sample were as follows:

Date:	22 October 2002
Time:	1:15 p.m.
pH	7.96
Conductivity:	241 µS/cm
Temperature:	+ 1.3^{o}C

The trench water is not highly mineralized in any parameters. Zinc is slightly high (1.3 mg/L) and arsenic is 0.7 µg/L both of which are above Saskatchewan Surface Water Quality Objectives for the Protection of Aquatic Life and Wildlife.

Trench 'B' cuts into the bedrock ridge over a length of 15 m, is 2.4 m wide and varies in depth from 1m to 1.5m. However, at the east end near the ridge crest there is a 2.4 m high backwall. The trench is moderately sloped down to the west, with several bench steps along its length. A felsic bedrock containing sulphidized shear zones is exposed. The bedrock contains disseminated pyrite. The trench walls are relatively solid, with slumping of the friable sheared rock, but overall the wall stability is good. Some loose sheared rock occurs at the edge of the trench wall. Semi-mature trees (4-cm to 10-cm diameter) have regrown along, and inside the trench.

Table 6.16-1
Hanny Trench-Water Quality

Parameter	Units	Result	SSWQO [1]
Total Trace Metals			
Aluminum (Al)	mg/L	0.130	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	0.7	0.05
Boron (B)	mg/L	0.016	
Barium (Ba)	mg/L	0.019	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	0.002	0.001
Cobalt (Co)	mg/L	0.006	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.015	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) [4]	mg/L	0.006	0.025
Phosphorous (P)	mg/L	0.020	
Lead (Pb)	mg/L	0.011	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.004	
Strontium (Sr)	mg/L	0.110	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	1.300	0.05
Total Major Metals			
Calcium (Ca)	mg/L	29.00	
Potassium (K)	mg/L	2.60	
Magnesium (Mg)	mg/L	8.80	
Sodium (Na)	mg/L	3.600	
Iron (Fe)	mg/L	0.37	1
Manganese (Mn)	mg/L	0.210	
Silicon (Si)	mg/L	2.90	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	6.71	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 [2]
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 [3]

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Fresh rock faces and a lack of vegetation suggests the trench was recently excavated. A small (possibly newer) shallow trench was discovered along the shoreline about 1.2 km south of the site. The trench is 2.4 m long, 1.2 m wide and 0.6 m deep. A rock cairn, using the waste rock, had been erected beside the trench.

Trench 'A' presents a fall hazard if approached from the upslope side, due to the steep and deep backwall. Trench 'B' is shallower and has less of a fall hazard.

6.16.5.3 Waste Rock

At Trench 'A', coarse (15 cm to 30 cm size) waste rock overlies gravel sized muck rock. The waste rock has been piled on the northwest side of the trench and extends along the low-sloped shoreline into the lake. The waste rock disposal area is about 9 m long by 3 m wide and 0.5 m deep with a volume of approximately 13 m^3. The rock is a mix of felsic and phyllitic intermediate rock (rhyolites and dacites, respectively, according to the Saskatchewan Mineral Deposit Index (SMDI) inventory) with numerous pieces of quartz vein. Minor sulfides were noted in the phyllitic rock.

At Trench 'B', coarse (30 cm to 45 cm size) waste rock has been piled mostly along the north edge of the trench. The pile covers an area of 4.6 m wide by 12 m long by 0.6 m deep with a volume of approximately 33 m^3. The waste rock consisted of both sulphide mineralized and unmineralized felsic rock.

The low slopes of the waste rock piles do not present a public safety hazard.

6.16.5.3 Tailings

No tailings were observed. The workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.16.5.5 Debris

No debris was observed.

6.16.5.6 Site Buildings

No buildings or ruins were observed.

6.16.6 History of Previous Inspections

No record of previous inspections was located.

6.16.7 Risk Assessment Ranking

Public Safety Assessment	8.5
Environmental Assessment	5.5
Combined Total Assessment	14
Ranking	14/26

The workings are visible from the lake, thus increasing the chance of casual visits. The depth of the trenches at the backwall present a potential fall-in hazard to visitors. In addition, the trench openings (and greatest depth) are not readily recognizable if approached from the east over the ridge crest. Therefore, 1.5 points were attributed to the “additional public safety risks” category.

The environmental risks were associated with Trench ‘A’. One point was attributed to the “additional environmental risks” category due to the potential of a hydraulic connection of trench water and the lake.

6.16.8 Recommended Follow-up

Follow-up activity should be considered, involving the back-filling of the two trenches to reduce the potential fall hazard. The surrounding waste rock can be pushed back into the trench.

Photograph 6.16-1. Hannay Deposit-Trench 'B'-October 22, 2002

Photograph 6.16-2. Hannay Deposit View of Site Along Shoreline-October 22, 2002

Photograph 6.16-3. Hannay Deposit Trench 'A'-October 22, 2002

6.17 Ace Deposit

6.17.1 Location and Access

Site Inspection: 22 October 2002

Location: NTS Mapsheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 39' 30" (general site location)	6060023 m N 677210 m E (general site location)	NW Workings 6060128 m N 677198 m E Hill Top Workings 6059967 m N 677487 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located near the west shore of Missi Bay on Amisk Lake, 10.5 km west of the Community of Denare Beach. Missi Bay is situated at the south end of the large Missi Island. The site workings are accessible by boat followed by a 100 m to 150 m walk westward from the shore.

The site location is shown in Figure 6.17.1. The site plan is shown in Figure 6.17-2. Photograph Nos. 6.17-1 to 6.17-3 show the site.

6.17.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0171
Property: (was: S-101709; S-96237; CBS 3191; M+BIG Claims; JO and ACE Claims)
Location: Amisk Lake - southwest end of Missi Island
Owner(s): Open - see Section 6.17.4 for previous owners
Commodity: Zn **Associated Commodities:** Cu; Au; Ag; Mo; Bi; Te
Deposit Type: Outcrop

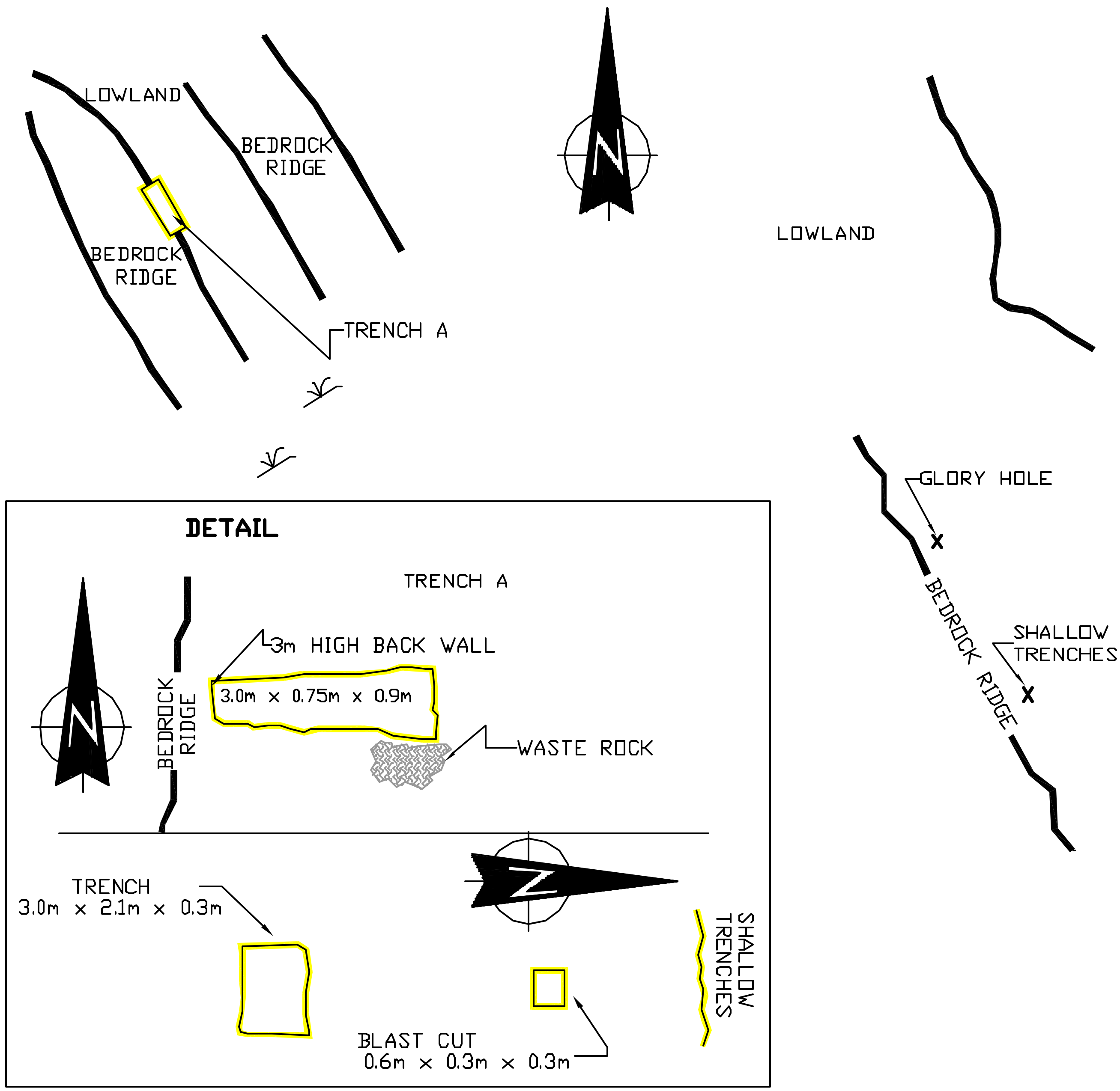
6.17.3 Geology

The showing, which is located on the southwest portion of Missi Island, approximately 1,100 m (3,600 ft) east of the south end of Hannay Bay.

DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
ACE DEPOSIT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.17–1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

ACE DEPOSIT PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.17–2

The showing consists of fracture zones 3.0 to 9.1 m (10 to 30 ft) wide, striking 300° to 310°, and which occur 144.8 m (475 ft) apart on two sides of a large outcrop of fine grained, dacite of the Amisk Group on the southeast side of Missi Island.

Several pits and trenches occur in the area and in two of these pits the dacite is cut by minute, very fine grained quartz stringers, which in places contain molybdenite and tetradymite (a bismuth telluride). The fracture zones contain partly altered rhyolite with disseminated pyrite and minor chalcopyrite. Gold may be panned from the weathered rock.

A 6.1 m (20 ft) mineralized zone was exposed by trenching in 1972. A representative sample assayed 2.03% Zn, 0.14% Cu and 0.19 oz/ton Ag. There are two generations of mineralization present at the showing. Older Archean mineralization consists of finely disseminated pyrite and minor chalcopyrite that is confined to the basic through to intermediate volcanics. A later generation of sulphide (including molybdenite) mineralization was emplaced along shears and fractures which are related to post tectonic granodiorite intrusion.

The drill holes intersected a sequence of altered meta-volcanics which range in composition from rhyolite to andesite. Locally, the rhyolite and dacite are porphyritic. This sequence has been intruded by quartz-feldspar porphyry and, locally, granodiorite. The volcanics contain a series of pyritic quartz and carbonate stockwork-type infillings and the rhyolite contains disseminated pyrite. J.F. Wright noted gold in the weathered rock.

6.17.4 Exploration History

The showing was initially staked as the ACE claims prior to 1930 by R. Besler.

In October of 1956, J. Brain and O. Hanson staked the showing area as the JO claim group. Four pits and three trenches were completed on the property. In 1962, Keevil Mining completed a ground magnetic survey over the west side of Missi Bay and the adjacent showing area. On 12 January 1968, the JO claims were converted to ML 5065. In 1971, Flin Flon Mines Ltd. optioned the property and completed an Induced Polarization (IP) survey. In 1972, Missi Island Mines completed a soil sample survey over the FF1 IP anomaly, which was located on ML 5245 (formerly BIG claim No. 16). In 1972, Missi Island Mines exposed the mineralized zone by completing further trenching.

In 1973, Missi Island Mines completed ground EM and I.P. surveys and twelve follow-up drill holes on the property.

By 1982, H.D.S. Associates had staked CBS 3191 over the showing area. Three trenches were completed in the immediate showing area. Samples from the trenches returned on low values. The property lapsed.

On 31 July 1984, SMDC staked the showing area as S-96237. In 1984, SMDC geologically mapped and lithogeochemically sampled the ACE Showing and the JMB property. In 1985, SMDC completed ground EM, magnetic and IP surveys over grid 3-85. In the same year, a one line test biogeochemical survey was completed to the north of the showing that portion of grid 3-85 covered by adjoining ML 5065 and ML 5245.

In 1985, Cameco completed ground VLF-EM, magnetic, and IP surveys over that portion of grid 3-85 which covers the JMB Showing.

In 1988, Cameco completed drill holes AL8-169 to 173 on the JMB property. No significant intersections were encountered. The property was allowed to lapse. On 5 August 1993, Claude Resources Inc. staked the showing as S-101709. In 1997, Claude completed reconnaissance geological mapping, prospecting, and rock sampling on the claim. No sampling was completed in the immediate showing area. Significant assay values were not obtained on S-101709. On 1 January 1999, Claude allowed the property to lapse.

6.17.4 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.17.4.1 General

The Ace Deposit site was inspected on 22 October 2002. There was a 2-cm to 4-cm thick snow cover over 90 per cent of the ground surface. Site access was by boat to the Missi Bay shoreline, and then a 100-m to 150-m long traverse through the bush. Difficulty was encountered in locating the workings due to their small size and obscuring forest cover. It is not certain if all the workings were found. The Saskatchewan Mineral Deposit Index (SMDI) inventory indicates there were four pits and three trenches completed, however, only two workings were located. A cruise along the shoreline, within 200 m of the general site location, did not reveal any other workings visible from the lake. Furthermore, during the aerial fly-over no workings were observed.

The workings were found in two locations, some 300m apart, and are referred to as the “Hill Top Workings” and the “NW Workings” (both names assigned for this investigation). A

25 m high hill was the location of the Hill Top Workings. A low rising outcrop ridge, near a large muskeg, was the location for Trench ‘A’ at the NW Workings.

There was no evidence of recent visitation.

Forest vegetation is a mix of poplar, birch and conifers of moderate density.

6.17.4.2 Mine Workings

At the “Hill Top Workings”, a shallow trench with dimensions of 2 m x 3 m and depth of 0.3 m was observed. Close by was a small pit about 0.3 m square and deep, which appears to have been blasted to obtain a rock sample. Overburden moss and vegetation appears to have been stripped off the outcrop in areas. Approximately 60 m northwest is a small excavation (2 m x 1 m) into overburden along the hillside which exposes sheared rock for sampling.

The “NW Workings” consist of a single trench (Trench ‘A’) along the edge of a low rising outcrop. The trench is 3 m long, 0.6 to 1.2 m wide and 1m deep, and dry. The backwall of the trench, against the outcrop, was 3 m high. Spruce trees of 5-cm diameter have partially ingrown the trench. A lowland, with alder groves, is located about 25 m to the east, between low outcrop ridges.

The trenches do not pose a serious public safety or environmental hazard due to their shallow depths, open visibility, and distance from the shoreline. There was no evidence of standing water in the trenches.

6.17.4.3 Waste Rock

A small amount of coarse waste rock (from excavation of the trench) was observed along the south edge of Trench ‘A’ at the NW workings. Based on the trench size, there is an estimated 2.5 m^3 of waste rock. Some of the waste rock is intensely sulphide stained. The low sloped waste rock piles do not appear to present a public safety hazard.

6.17.4.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.17.4.5 Debris

An empty propane bottle was found near the shoreline, possibly on an old drill road.

6.17.5 History of Previous Inspections

No record of previous inspections was located.

6.17.6 Risk Assessment Ranking

Public Safety Assessment	4
Environmental Assessment	1
Combined Total Assessment	5
Ranking	26/26

6.17.7 Recommended Follow-up

No follow-up work is required for this site. The site is distant from view and from recreational tourist access, and the workings are shallow.

Photograph 6.17-1. Ace Deposit-Aerial View-October 23, 2002.

Photograph 6.17-2. Ace Deposit-Aerial View-October 23, 2002.

Photograph 6.17-3. Ace Deposit-Trench 'A' at the 'NW Workings'-October 22, 2002.

6.18 Birch Lake Mine

6.18.1 Location and Access

Site Inspection: 23 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 39' 40" lat 102^{o} 02' 00" long	6060908 m N 691348 m E	6060947 m N 691388 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 13 km southwest of the Town of Creighton on an island at the south end of Birch Lake. From the community of Denare Beach, the site is located 3 km to the east. The site is directly accessible by driving 4 south on the Birch Lake / Maraiche Lake Road, beginning from Highway 167. A 125 m long causeway connects the island to the east shore of Birch Lake.

The site location is shown in Figure 6.18-1. The site plan is shown in Figure 6.18-2. Photograph Nos. 6.18-1 to 6.18-6 show the site.

6.18.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0113
Property: ML 4559
Location: Birch Lake – island near east shore
Owner(s): Hudson Bay Mining and Smelting
Commodity: Cu **Associated Commodities:** Ag; Zn; Au; Se; Te; Cd
Deposit Type: Outcrop

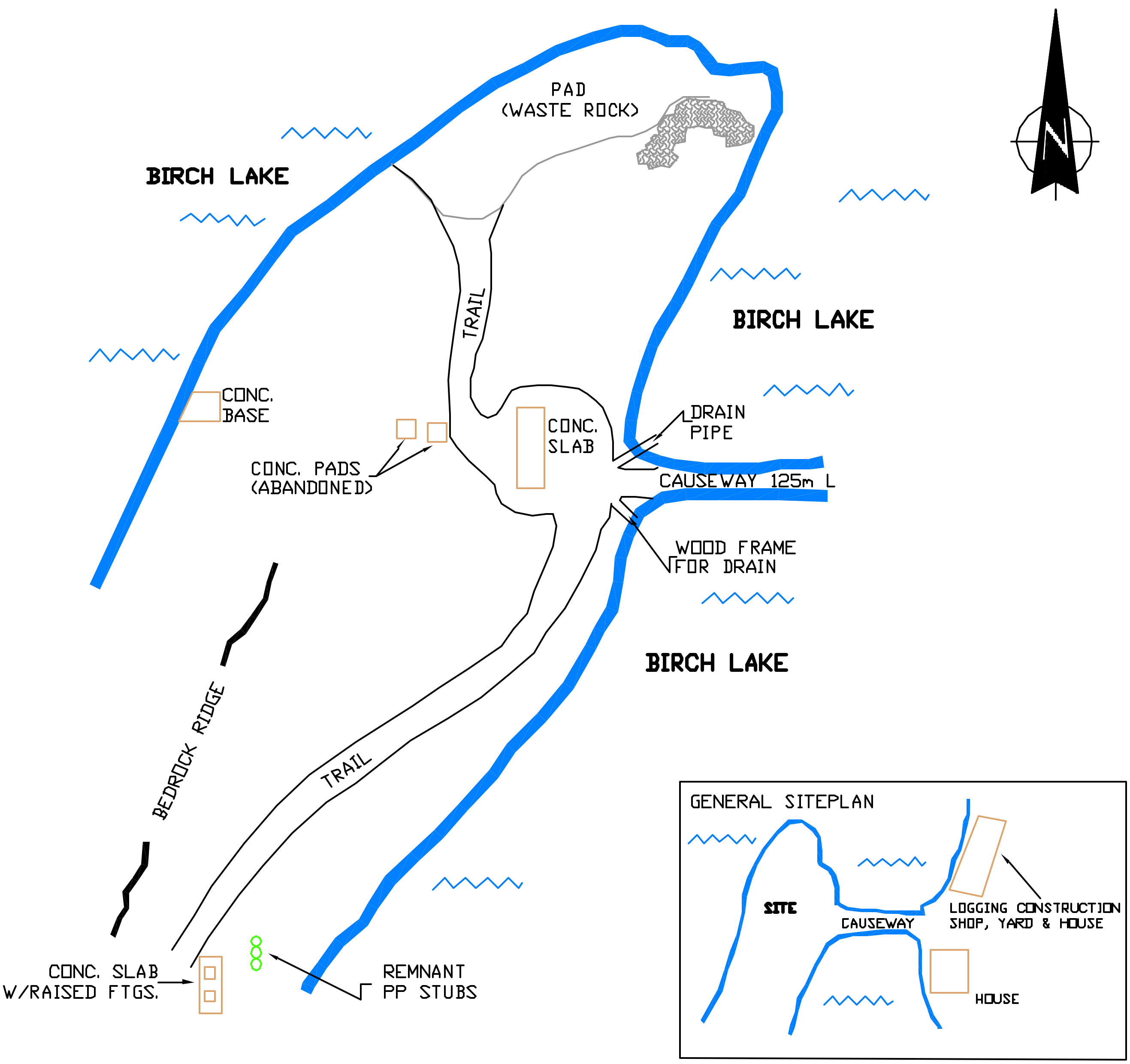
6.18.3 Geology

The Birch Lake orebody that comprises the showing is located on the east side of a large island near the south end of Birch Lake.

DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
BIRCH LAKE MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.18-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

BIRCH LAKE MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.18-2

The Birch Lake deposit is hosted within northerly trending, sub-vertical Amisk Group volcanics that have been deformed by several relatively tight north trending folds. The volcanics have been intruded by a series of quartz-feldspar porphyry and rhyolite porphyry sills and dykes. The metavolcanics have been subjected to greenschist facies metamorphism and are highly altered along the zone of shearing which hosts the deposit.

The original surface showing, which was discovered by Joe Brain, consists of a locally malachite stained chlorite schist which is mineralized with carbonate, disseminated pyrite-pyrrhotite, and a few stringers of chalcopyrite.

The mineralization occurs within a major 005° to 017°/70 to 75°NW trending shear zone which cuts a series of andesitic to basaltic metavolcanics. This major shear zone extends beneath Birch Lake and south through Ruth and Table lakes. Ground EM surveys outlined three conductive bodies along this major fault.

The "Main Shear Zone" body underlies the north end of the island and the adjacent waters of Birch Lake west of the island. Drilling outlined several roughly tabular shaped bodies of chalcopyrite-pyrrhotite-pyrite-magnetite-sphalerite mineralization which are an average 1.83 m (6 ft) wide by 45.7 to 91.4 m (150 to 300 ft) long. The mineralization occurs as disseminations and as small lenses and veinlets which are less than 2.5 m to a few meters wide. In places, the ore consists of 30% to 40% chalcopyrite. This body was mined as the Birch Lake Mine.

The "South Pyrite Zone" is located 500 m (1,640.4 ft) south of Birch Lake. Drilling over a 365.8 m (1,200 ft) strike length exposed small irregular masses and veinlets of pyrite-pyrrhotite with minor chalcopyrite and sphalerite in a steeply dipping band of sheared agglomerate. The host agglomerate consists of up to 7.6 cm (3 inch) in diameter rounded and angular white fragments in a dark grey matrix which has been partially replaced by the sulphide mineralization. Locally, the rock is almost completely sulphide replaced to form near solid sulphide. This body forms the mineralization further described by Saskatchewan Mineral Deposit Index (SMDI) 0163.

The " North Zone" body is located 1,371.6 m (4,500 ft) north of the "Main Shear Zone" body under a small lake which is just opposite the west narrows of Birch Lake. The description of the mineralization is similar to that at the "Main Shear Zone" but the ore is more consistent and over greater widths. This body was mined as the Flexar Mine or SMDI 0117.

The Birch Lake deposit host rock is described as a thin unit of rhyolite tuff-agglomerate. The footwall rocks are a 250 to 300 m (600 to 980 ft) thick sequence of pillowed basalts and the hanging wall rocks consist of andesite tuff. The host volcanics have been altered along the host shear. Epidote, brochantite, atacamite, and develline alteration products have been reported in the host rocks up to 0.6 m (2 ft) out from the orebody.

The rocks in the mine area have been variably sheared and altered to chlorite schist. Mineralization is concentrated along these north trending shears that run between the Birch Lake Mine and the Flexar Mine (SMDI 0117). The ore-waste contact on the hanging and footwalls is quite sharp.

The deposit consists of a number of tabular bodies or lenses that contain semi-massive to massive sulphide that includes chalcopyrite, pyrite, pyrrhotite, and lesser magnetite and sphalerite. The orebody varies from 45.7 to 61.1 m (150 to 200 ft) in length and has an average width of 1.8 m (6 ft).

Mining began in 1957 and continued until the ore was exhausted in 1960. Exploration drilling along the several north trending shears that extend from the Birch Lake Mine to the Flexar Mine intersected values up to 0.49% Cu over 4 m (13 ft). Locally, up to 2% Cu over short widths was intersected.

6.18.4 Exploration History

The Birch Lake deposit was discovered by J. Brain in 1949 and was optioned to Hudson Bay Mining and Smelting Co. Ltd. the same year.

The original deposit was prospected and diamond drilled during 1951 to 1952 at which time the orebody was outlined. A total of 63 holes and 12.191 m of drilling was completed.

Development work during 1952 to 1956 consisted of 2,111.3 m (6,927 ft) of development drilling and the sinking of a 500.5 m (1,642 ft) 3-compartment shaft. Lateral drifting commenced on six levels.

Mining began in 1957 and continued until the ore was exhausted in 1960. During this period, approximately 273,500 tonnes of ore grading 6.21% Cu were mined. The ore was trucked to the nearby Coronation Minesite and hauled from there to the Flin Flon smelter by rail. All mine buildings have been dismantled and removed.

In 1982, Hudson Bay Exploration completed ground EM and magnetic surveys between Birch and Ruth Lakes

In 1987, Hudson Bay Exploration completed ground EM and magnetic surveys and drilled one hole in the vicinity of Birch Lake Mine.

In 1990, Hudson Bay cut a new grid immediately west of the mine site on the west shore of Brain (Birch) Lake and completed ground VLF-EM and magnetic surveys. In 1991, Hudson Bay Exploration completed drill holes B-85 to B-88 on this grid. Drill holes B-85 to B-87 encountered a horizon (under the channel immediately west of the mine site) with disseminated sub-economic pyrite-pyrrhotite-chalcopyrite mineralization which returned minor copper values. Drill hole B-88, which was spudded to test the mine horizon below the workings, encountered minor Cu-Zn values in this horizon.

In 1991, Hudson Bay completed drill holes B-89 and B-89W1 to test the down-plunge aspect of the mined out Birch Lake Deposit below the current workings. Drill hole B-89 intersected up to 6% bleb type chalcopyrite from 436 m to 437 m.

6.18.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.18.5.1 General

The Birch Lake Mine site was inspected on 23 October 2002. Approximately 2 m of snow covered about 80 per cent of the ground surface. Direct site access was achieved by vehicle using the Birch Lake Road and causeway. Several houses are situated along the east shore of Birch Lake. At the east approach to the causeway is a house and a logging /road builders contractor's shop and yard. Rice harvesting air boats are also stored in the equipment yard.

The site is at the north tip of a rocky island, which rises about 10 m above the lake. The site has been reclaimed leaving a graded surface with three concrete ruins. Sand covers bedrock out crops in the centre of the site. In the vicinity of the site, the bedrock surface is about 5 m above the lake and slopes downward to the west, north and east. Vegetation of sparse to moderate density, consisting of scrub brush and young birch and spruce, has regrown over most of the site.

A drivable trail crosses the site and follows the spine of the island. There was no evidence of recent visitation at the site.

6.18.5.2 Mine Workings

The semi-cleared area of the former workings is about 80 m wide and 90 m long and covering about 0.7 hectares. No open workings were found. No public safety hazards were identified.

A horizontal 200 mm diameter steel pipe protrudes from the waste rock on the east side of the island beside the causeway. The pipe rests on remnant wood framework. The pipe was dry and there was no visible staining on the surrounding ground. On the other side of the causeway there was a similar remnant wood framework but no steel pipe or staining. The pipe is interpreted to be the remnants of a drainage pumping system used to keep the mine from flooding.

At the northwest shore is a boat / winter road landing, connected by trail to the causeway. The landing is about 15 m by 15 m, built of coarse waste rock overlain by sand.

The causeway is 6 m wide, 125 m high and 1.5 m long, and built of finely crushed waste rock. Patchy scrub brush grows along the edges of the causeway.

6.18.5.3 Waste Rock

A small amount of waste rock has been left as a windrow on the edge of the bedrock on the north side of the site. The volume of rock is estimated to be 30 m^3. The waste rock is a metavolcanic with occasional small pieces of rock containing sulfides. The broken rock is coarse to very coarse (0.3 m-1.5 m) in size, making footing difficult.

6.18.5.4 Tailings

No tailings were observed. The ore was shipped from the site for processing in Flin Flon, and therefore no mill was built which would have resulted in tailings being produced.

6.18.5.5 Debris

Five concrete pedestals have been discarded on the site. Each trapazoid-shaped pedestal is 0.4 m at the base and 1 m high. The debris does not appear to present a public safety or environmental hazard.

6.18.5.6 Site Buildings

In the centre of the site is a concrete pad that is 4.6 m wide, 15 m long and 0.5 m high. It is not known if the pad was a building foundation or a cover to seal the former shaft.

On the west shore is a concrete base, 3.6 m wide by 6 m long and 1.4 m high. The foundation may have been from the pumphouse that supplied water to the mine buildings. Protruding from the base are three, horizontal, 5 cm diameter steel drain pipes. Frozen water was visible in one of the pipes.

Approximately 120 m south of the site on top of the bedrock ridge is a concrete slab (4.6 m by 10 m) with two large concrete footings. The size of each footing is 1.5 m by 2 m and 0.6 m high, with a wood pole bottom protruding from each footing. This remnant structure is located where a powerline crossed the island may have been the base for the powerline and electrical supply for the former mine. Nearby were the stubs of creosote-treated powerline poles, that have since been cut down.

The remnant concrete foundations are in good condition with no openings, and do not present a public safety or environmental hazard.

6.18.6 History of Previous Inspections

No record of previous inspections was located.

6.18.7 Risk Assessment Ranking

Public Safety Assessment	7
Environmental Assessment	4
Combined Total Assessment	11
Ranking	22/26

According to the SMDI inventory, about 270,000 tonnes of ore were mined. Thus it would be expected that waste rock from the development of underground workings should be considerable. However, only a minimal amount of waste rock was observed on the site which suggests that the waste rock (in excess of the causeway) was deposited into Birch Lake. Therefore, one point was attributed to the “additional environmental risks” category due to an unknown quantity of waste rock possibly in Birch Lake.

6.18.8 Recommended Follow-up

Overall, the site does not pose a public safety hazard since the site has been decommissioned leaving no shaft or other exposed underground openings. No further site clean-up activity is required.

From an environmental perspective, additional investigation should be considered to determine if waste rock has been deposited into Birch Lake, and if so, whether it poses an environmental risk to surface water and aquatic life.

Photograph 6.18-1. Birch Lake Mine-Aerial View-October 23, 2002.

Photograph 6.18-2. Birch Lake Mine-Discarded Concrete Pedestals-October 23, 2002.

Photograph 6.18-3. Birch Lake Mine-Concrete Footings and Slab for Power Line-October 23, 2002.

Photograph 6.18-4. Birch Lake Mine-Panoramic View Looking North-October 23, 2002.

Photograph 6.18-5. Birch Lake Mine-Concrete Slab-October 23, 2002.

Photograph 6.18-6. Birch Lake Mine-Drainage Pipe-October 23, 2002.

6.19 Newcor Mine

6.19.1 Location and Access

Site Inspection: 24 October 2002

Location: NTS Map Sheet 63 K/12
UTM Zone: 14U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 43’ 34” lat 101^{o} 54’ 56” long	6068000 m N 312248 m E	6068021 m N 312347 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 3 km south of the Town of Creighton, along the southeast shore of Douglas Lake. The site is directly accessible by driving 1.4 km south on the Douglas Lake Road, beginning from Highway 167.

The site location is shown in Figure 6.19-1. A general plan showing the mine site and other nearby trenches is presented in Figure 6.19-2. The mine site plan is shown in Figure 6.19-3. Photograph Nos. 6.19-1 to 6.19-6 show the site.

6.19.2 Property Information and Ownership

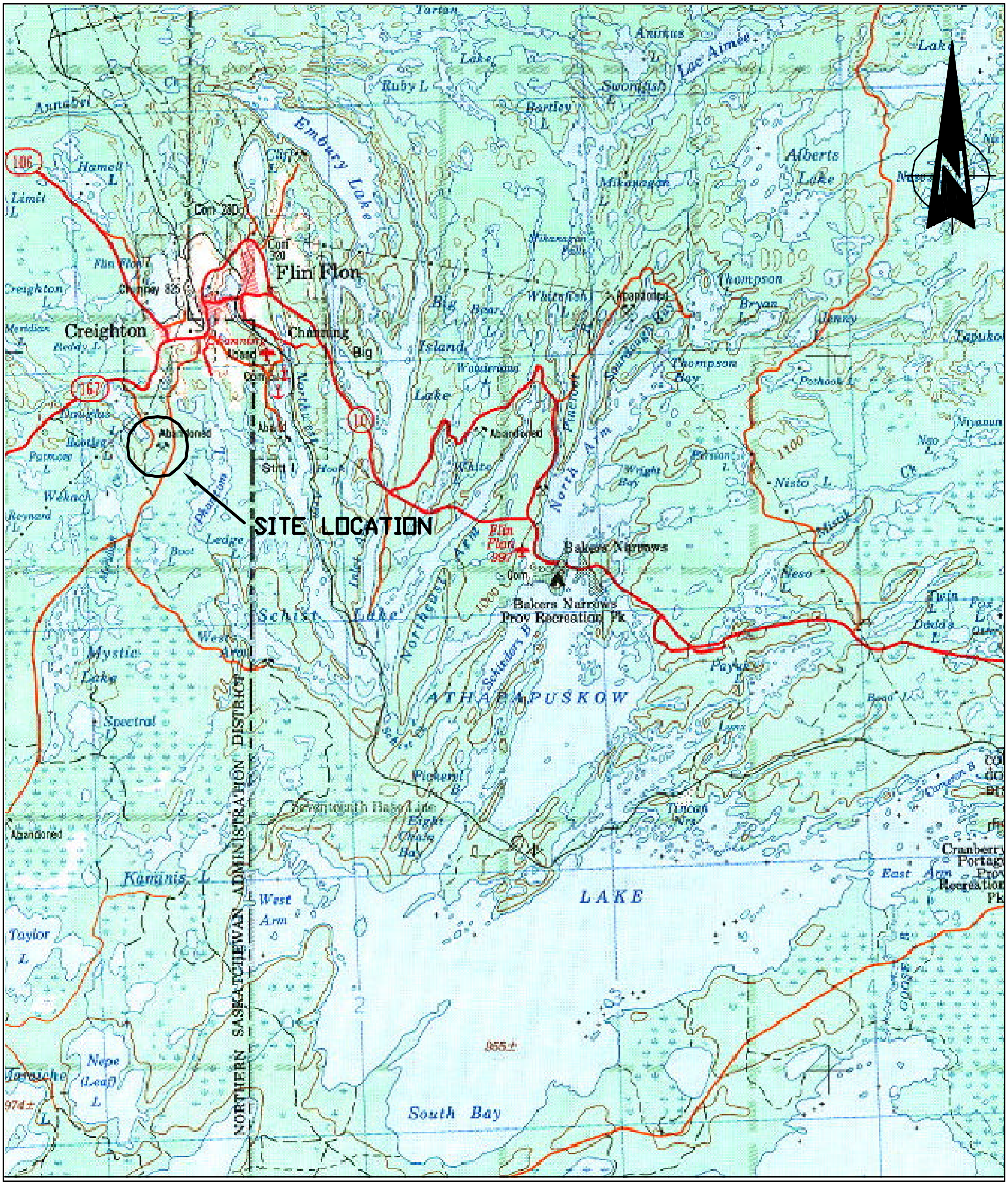
Saskatchewan Mineral Deposit Index Number: 0005
Property: formerly: CBS 3018; ML 5106 KAY claim No. 1; COR claims

Location: Douglas Lake southeast shore
Owner(s): Open – see Section 6.28.4 for previous owners
Commodity: Au **Associated Commodities:** Ag; Zn; Cu; Au
Deposit Type: Outcrop

6.19.3 Geology

The mesothermal gold deposit is located on the southeast shore of Douglas Lake.

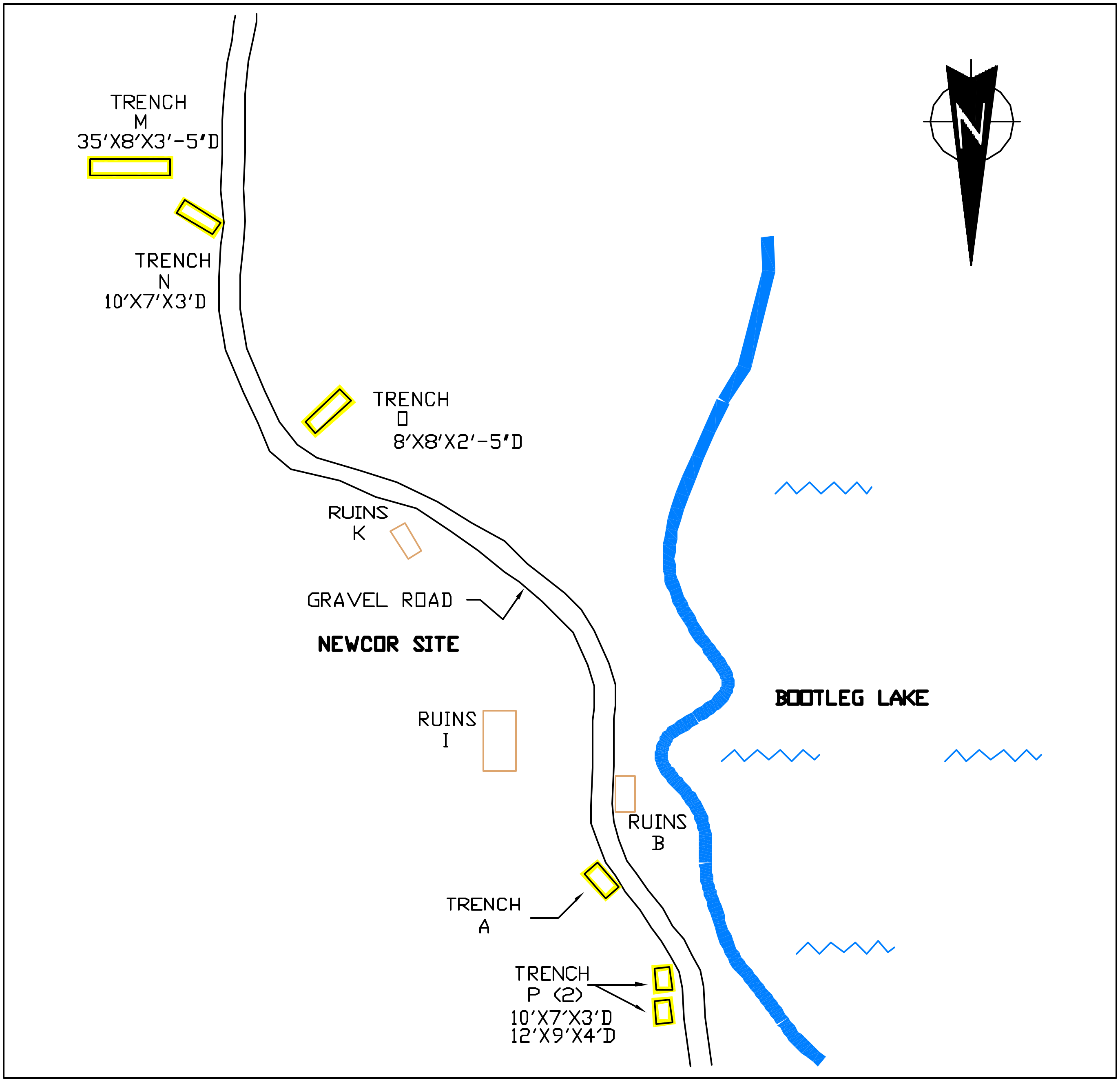
The showing consists of an ore body which occurs in a 330°-trending, steeply southwest-dipping shear zone which cuts a mass of chlorite schist (highly altered pillowed basalt) which strikes southeast and dips 65° SW. The mineralized horizon is traceable on the surface in trenches for 610 m (2,000 ft). The main deposit has a minimum length of 122 m (400 ft). The gold mineralization occurs mainly with arsenopyrite in quartz veins, stringers and lenses.



DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
NEWCOR MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.19-1



LEGEND:

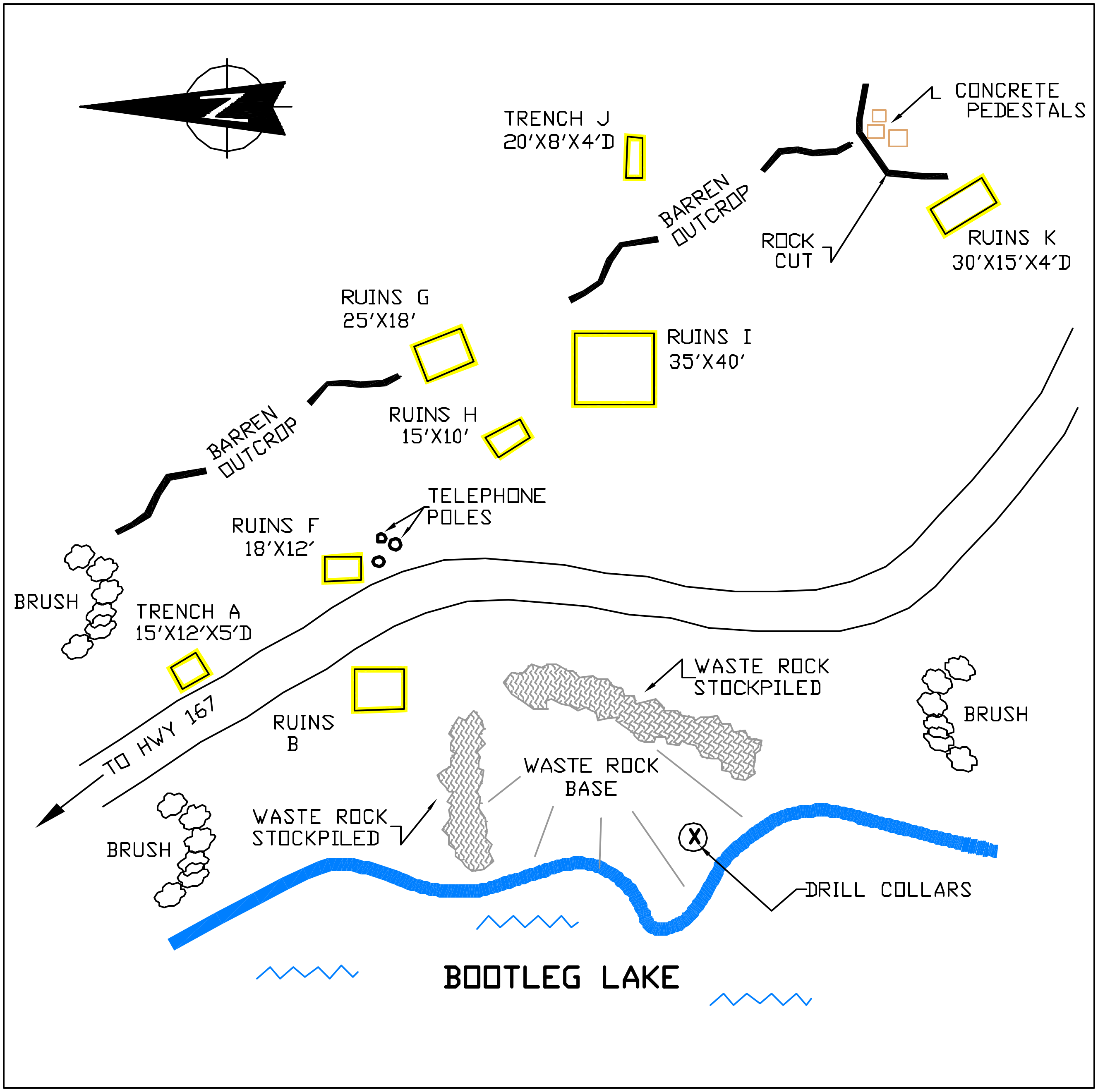
Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

NEWCOR MINE – GENERAL SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.19-2



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	●
Soil Sample Location	●

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

NEWCOR MINE – DETAILED PLAN OF SITE WORKINGS
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.19–3

The main host quartz-pyrite-arsenopyrite-chalcopyrite-sphalerite-gold vein has an average width of 5.5 m (18 ft). Both the host schist and the mineralized veins contain arsenopyrite, sphalerite, pyrite, and chalcopyrite.

Six tons of test ore were shipped to Ottawa which assayed 0.625 oz/ton Au, 0.88% Ag, 4.10% Zn, 0.4% Cu and 22.65% As.

6.19.4 Exploration History

The deposit was first discovered, staked and trenched by J. Tikkanen in 1933.

In 1934, the Flin Flon Gold Mining Syndicate was formed to acquire and develop the prospect. During the period 1935 to 1937, a 140 m (460 ft), 2 compartment shaft with levels at 125, 225, 325, and 38.1, 68.6, 99.1 and 134.1 m (440 ft) respectively was constructed. The property was acquired by Flin Flon Gold Mines Limited in 1936, and subsequently to the Douglas Lake Mines Limited in 1937, who leased it to Wampum Gold Mines Limited in 1942. The property was purchased by Newcor Mining & Refining Limited in 1943 and by Asfe Mines Limited in 1951, who held the property until 1959 when it lapsed. The property was staked in 1959 by G.F. Thompson as the COR claims. Later, ML 5106 was held by H.L. Thompson.

In 1944, 5.5 tonnes of test ore was shipped to Ottawa and returned the values listed above. The Flin Flon smelter refused to accept the ore due to its high arsenic content and consequently, in 1947, a 175 tonnes/day reduction mill and a 110 tonnes/day smelter were set up on the site to process stockpiled ore. Gold and arsenic were produced in 1947. In 1949, ore reserves were listed. Arsenic trioxide (18 tonnes) remained on the property. Development work completed prior to 1949, in addition to the shaft, included 4,572 m (15,000 ft) of diamond drilling. Development work since 1957 consisted of 4 drill holes, minor trenching and assaying. By 1972, the deposit was within KAY claim No. 1. In this year, W. Reid completed 1 trench. No assay results were given. In 1973, Reid completed trenches on KAY claims, 1, 4 and 6.

In 1972, H.L. Thompson completed a drill hole on the property. Between 1974 and 1977, drill hole ZN-1 was completed.

On 13 April 1977, Hudson Bay Exploration staked the showing as CBS 3018.

By 1980, the deposit was within ML 5106. D. Martin completed mineralogical and metallurgical tests on the ore. In 1980, Abaco Canada Consultants geologically mapped and sampled the minesite. In 1981, Abaco completed a ground EM survey over the minesite.

In 1983, D. Martin regained control of the property and resampled the 6 old pits and trenches that constitute the original COR Showing and completed 19 drill holes on the COR Showing. At this time, Vista released an ore reserves. In 1988, Hudson Bay Exploration completed ground VLF-2 and magnetic surveys over the showing. In the same year, Vista released a revised ore reserves calculation.

On 01 October 1994, CBS 3018 was allowed to lapse.

6.19.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.19.5.1 General

The site was inspected on 24 October 2002. Approximately 2 cm of snow covered about 20 per cent of the barren outcrop where the mine workings were situated, and covered about 70 per cent in the surrounding forest.

Direct site access was achieved by vehicle using the Douglas Lake Road which passes through the site. The Douglas Lake Road is used daily by local inhabitants, who also use the road as a dog-walk. During the winter, it is likely the road is used by snowmobilers to connect to the snowmobile trails crossing Bootleg Lake further to the south. Recent visitation onto the site itself was not apparent during the site inspection, however minor household refuse has been discarded onsite.

The site has been reclaimed, leaving a barren undulating outcrop area with several concrete foundation ruins of the former buildings, and some bedrock depressions infilled with minor amounts of waste rock. Most of the waste rock is located along the Douglas Lake shoreline.

Conifer dominant forest bounds the site to the north, east and south, with Douglas Lake on the west side. The Douglas Lake road passes along the west side of the site. Clumps of scrub bush and small poplar trees grow on the outcrop area. Local topographic relief is less than 2 m, with the site sloping gently west toward Douglas Lake.

For purposes of this investigation, the various workings and ruins were assigned letter identifiers, A to P, in order to distinguish them from each other.

6.19.5.2 Mine Workings

The cleared area of the former mill and mine workings is about 100 m wide and 150 m long and covers approximately 1.5 hectares. Several old and newer trenches were found 50 m to 150 m north, and 50 m south of the site. No open workings, other than trenches, were observed. Rock Cut 'L', at the edge of a 2 m high outcrop resembles a loading pocket.

Trench locations, and the dimensions of each excavation, are provided in Figure 6.19-2 and 6.19-3. Within the immediate site area are two shallow trenches. Trench 'A' is open and beside the Douglas Lake Road, whereas Trench 'J' has been partially infilled with waste rock.

North of the site are three trenches near or beside the Douglas Lake Road. Trench 'M', the longest, exposes a metavolcanic rock with some visible sulfides and quartz veining. Scrub bush has ingrown part of the excavation. Trench 'N' is beside the road and visible. Trench 'O' appears to be newer.

South of the site, is Trench 'P', consisting of two small excavations situated 10 m from the Douglas Lake Road. A sulphide stained shear zone is exposed in this newer looking trench. Scrub bush has ingrown the excavation.

Two drill collars with protruding casing occur at the shoreline of Douglas Lake where waste rock has been placed. Several other drill collars with casing were observed in the vicinity of Trench 'M' and 'N'.

6.19.5.3 Waste Rock

The majority of waste rock is spread along the shore of Douglas Lake (immediately west of the road and workings), and covers an area of about 35 m x wide by 65 m long, and extends into the lake an unknown distance. Depth of the waste rock disposal area is not known. The waste rock is a chloritic schist with finely-crushed (6 mm to 25 mm size) rock overlain by coarser crushed rock (up to 120 mm). The waste rock is essentially unmineralized, with only a few pieces bearing visible sulfides and quartz veining.

On top of the shoreline waste rock apron are two windrows of waste rock; 15 m and 35 m long, about 3 m wide and less than 2 m high respectively. Concrete demolition rubble and slabs, and scrap timbers are mixed with the broken rock. The coarse waste rock is a chloritic schist.

The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.19.5.4 Tailings

No tailings were observed.

6.19.5.5 Debris

Demolition debris found onsite includes pieces of concrete rubble and broken slabs mixed within the waste rock, concrete rubble beside the building ruins, and three massive concrete pedestals. Scrap lumber and timbers are found mixed with the waste rock, beside the ruins and scattered about the site. Twelve lengths of creosote-treaded telephone poles have been left beside Ruins ‘F’. Several lengths of steel rail (used for ore car tracks) were found at Ruins ‘I’. A minor amount of household and other litter has been discarded onsite and includes waste oil filters, 1-litre oil containers (empty), pieces of sheet metal and broken glass beverage bottles. Broken glass represents a minor hazard to animals and people. No significant environmental hazards associated with the debris were observed.

6.19.5.6 Site Buildings

Six concrete foundation ruins, of varying size are located on the site. The dimensions of each ruin are listed in Figure 6.19.3. Ruins ‘I’ is the largest with 1.2 m high massive footings at one end, and may represent the former headframe. Ruins ‘K’ is a massive in-ground foundation with two “trench” like 1.2 m deep openings, which may pose a fall-in hazard.

6.19.6 History of Previous Inspections

When the Newcor mill shut down, it was estimated that approximately 36.4 tonnes (40 tons) of arsenic trioxide remained on site. Approximately 18.2 tonnes (20 tons) of this was sold while the remainder was enclosed in a vault constructed during the 1950’s.

The vault was penetrated by Saskatchewan Environment in 1980 and 1981 to determine the nature of the contents and to explore possible methods of disposal.

Saskatchewan Environment initiated an assessment in August 1987 to sample the atmosphere in the vault, excavate test pits to determine the thickness of overburden, and to sample the sediments, surface water and groundwater. On the basis of this appraisal, it was estimated that approximately 18.2 tonnes (20 tons) of concentrated arsenic waste would have to be removed from the vault and approximately 1,500 m^3 of mildly contaminated soil and 14,000 litres of contaminated water would also require disposal.

The Department reached an agreement with Nerco Con Mine Limited of Yellowknife N.W.T. to receive the concentrated arsenic waste for upgrading and recycling. Hudson Bay Mining and Smelting Co. Ltd. of Flin Flon Manitoba agreed to receive the moderately contaminated and low level wastes for disposal in designated areas within their tailings management area. Contaminated water was also to be delivered to the oxide pond within the HBM & S tailings management area.

Work began on site on 27 September 1987. The vault was partially penetrated and constant security was established on 28 September 1987 to keep the public away from the site. Removal of the concentrated wastes from the vault was completed in the late evening of 01 October 1987. This material was sealed into steel drums which were cleaned and labeled in accordance with transportation regulations. The waste material was transported to the Nerco Con Mine at Yellowknife, N.W.T.

Sampling of sediments and surface water on site after the start of clean up operations identified additional extensive surface contamination. Rubble and waste around the abandoned mill site was found to have arsenic values of up to 20%. Consequently additional work was completed to clean up these contaminated areas.

Prior to the start of clean up operations, ponded surface water had been removed. Only a small amount of surface water remained and this was removed by mixing it with soil during excavation operations. However, heavy rain occurred on 04 October 1987 causing more than 10,000 litres of contaminated water to collect on site. This water had arsenic values of up to 1,600 mg/L. All runoff was successfully contained on site and was disposed of by trucking it to the HBM & S oxide pond.

Overburden and contaminated rubble was transported in tarped dump trucks with sealed boxes. Most of the overburden south and east of the vault was excavated to bedrock. In all instances, at least 600 mm of overburden was removed. Containers of arsenic trioxide were found buried at three locations south and east of the vault. These containers were handled in the same manner as the vault contents.

The contaminated sediments and rubble from the mill site north and east of the vault was excavated and removed to the disposal area. Most of the foundations were also removed. A number of additional containers of arsenic trioxide were found buried in this area. These were disposed of in the same manner as the vault contents.

Assays undertaken during the clean up operations confirm that the vault contained concentrated arsenic waste. Arsenic values of up to 63% were measured for arsenic trioxide in the drums. The average arsenic values in the concentrated waste delivered to Nerco Con Mine was 52%. The average arsenic content in the other wastes was 1.01% and 0.27% for the moderately contaminated and low level wastes respectively. By contrast, the arsenic content of the clean fill used to cover the site was less than 0.004%.

Fifty barrels of concentrated arsenic wastes were removed from the vault. It is estimated that 744 m^3 of moderately contaminated waste, 3,120 m^3 cubic metres of low level waste and 10,000 litres of contaminated water was removed from the site. On the basis of assays, it is estimated that in excess of 32,370 kg of elemental arsenic was disposed of. In excess of 1,500 m^3 of clean mineral soil was hauled to the site to cover the excavated areas.

All of the disturbed areas were reclaimed in a fashion that would enhance surface runoff, reduce leaching of arsenic and promote vegetation cover to stabilize the site. All of the disturbed areas were covered with clean mineral soil with a minimum depth of 150 mm. Positive drainage of the ponding and muskeg areas was provided through surface grading.

6.19.7 Risk Assessment Ranking

Public Safety Assessment	12.5
Environmental Assessment	7
Combined Total Assessment	19.5
Ranking	6/26

The presence of trenches adjacent to, or near the Douglas Lake Road which passes through the site, increases the chance that motor vehicles, ATVs or snowmobiles could accidentally be driven into the shallow excavations, particularly if obscured by snow. Furthermore, Douglas Lake Road is used on a daily basis, thereby increasing the potential of people to be exposed to blind openings and fall-in hazards at the trenches or ruins. Broken glass is common on the site, and increases injury risk. Therefore, two points were attributed to the “additional public safety risks” category. Three points were attributed to the “additional environmental risks” category due to an unknown quantity of waste rock in Douglas Lake and because Douglas Lake is a source of drinking water for the town of Creighton.

6.19.8 Recommended Follow-up

Overall, the site does not pose a major public safety hazard since the site has been decommissioned leaving no shaft or other exposed underground openings. Nevertheless, there is a potential safety concern with open trenches beside Douglas Road into which motor and recreational may be driven. The trenches should be backfilled with the available waste rock. The opening at Ruins 'L' should also be filled to eliminate any fall-in hazard. For aesthetic reasons, concrete rubble, scrap lumber and timber and steel should be removed and properly disposed of.

Photograph 6.19-1. Newcor Mine Site
Aerial View-October 23, 2002

Photograph 6.19-2. Newcor Mine
Site-Panoramic View-October 24, 2002

Photograph 6.19-3. Newcor Mine Site
Concrete Ruins-October 24, 2002

Photograph 6.19-4. Newcor Mine Trench 'M'-October 24, 2002

Photograph 6.19-5. Newcor Mine Site-Concrete Ruins-October 24, 2002

Photograph 6.19-6. Newcor Mine Site Trench 'N'-October 24, 2002

6.20 Flexar Mine

6.20.1 Location and Access

Site Inspection: 23 October 2001

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 40’ 36” lat 102° 01’ 44” long	6062650 m N 691561 m E	6062840 m N 691529 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 11 km southwest of the Town of Creighton along the east shore of Birch Lake. The site is located 3.5 km northeast of Denare Beach. The site is directly accessible by driving 1.7 south on the Birch Lake / Maraiche Lake Road, beginning from Highway 167. A 100 m long access trail leads to the site off the Birch Lake Road.

The site location is shown in Figure 6.20-1. A general plan showing the mine site and a nearby concrete foundation is shown in Figure 6.20-2. The mine site plan is shown in Figure 6.20-3. Photographs Nos. 6.20-1 to 6.20-8 show the site.

6.20.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0117
Property: S-99602 (formerly: ML 5207)
Location: Birch Lake – east shore
Owner(s): Hudson Bay Exploration and Development
Commodity: Cu **Associated Commodities:** Zn; Ag; Au
Deposit Type: Drillhole

6.20.3 Geology

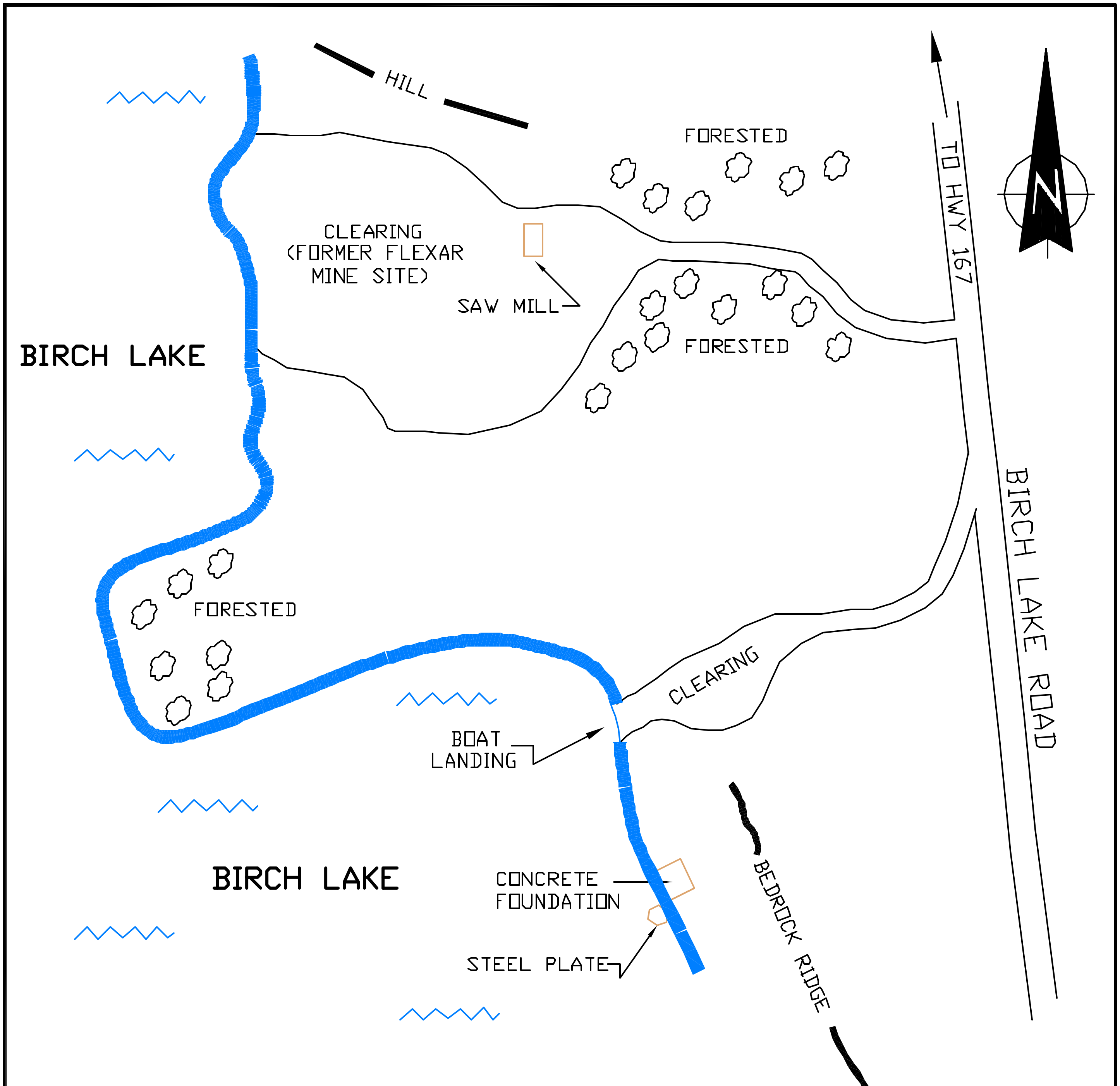
Birch Lake North Cu Zone or the Flexar Cu Mine is located 1.5 km (0.93 mile) north of the Birch Lake Mine opposite the mouth of the west bay at the north end of Birch Lake. The deposit lies completely under Birch Lake.

The deposit occurs within northerly trending Amisk Group volcanics that have been subjected to greenschist facies metamorphism. The deposit is hosted by a chlorite schist along the same

DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
FLEXAR MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.20–1



LEGEND:

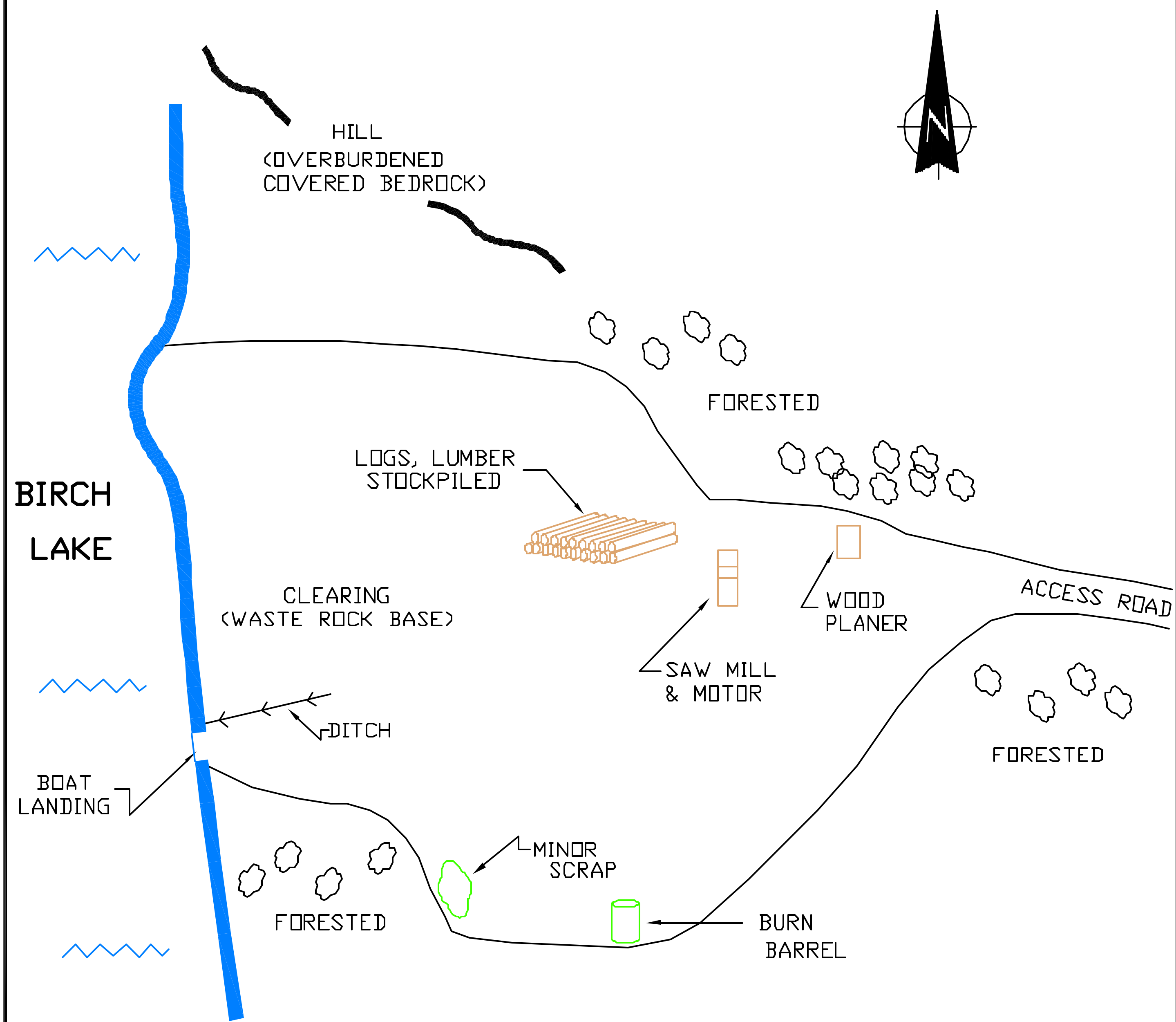
Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

FLEXAR MINE– SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.20–2**



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

FLEXAR MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.20–3

shear system which hosts the Birch Lake Mine. Both the hanging wall and foot wall rocks are andesitic flows. The ore-waste contacts are quite sharp. Chloritic alteration (epidote, brochantite, atacamite and devillite) extends only a few meters into the adjacent wall rocks.

The deposit consists of a series of sheet-like bodies of massive pyrite, pyrrhotite, and chalcopyrite, with lesser magnetite and sphalerite veining. The ore is consistent with the Birch Mine ore and individual ore shoots tend to have a greater width than the shoots at the Birch Mine. The ore is similar to Birch Lake ore but is of lower grade.

The deposit has a strike length of 215 m (705.4 ft) and a width that averaged 1.5 m (5 ft) and varied from 1.2 to 3.1 m (4 to 10 ft). The ore zone extended vertically from the 142 m (475 ft) level to the 375 m (1,250 ft) level or a vertical extent of ± 241 m (± 787 ft). The ore zone dipped slightly to the west and had a near vertical plunge.

Other copper-bearing shear zones have been intersected under Birch Lake between the Flexar Shaft and the Birch Lake Mine shaft. Drill intersections of up to 0.44% Cu over 4 m (13 ft) have been recorded, with narrower widths of 2% Cu.

6.20.4 Exploration History

The conductive anomaly characterizing the anomaly was discovered by a Hudson Bay Exploration and Development ground EM survey in 1951. In 1952, Hudson Bay acquired the property from J. Brain and completed 15 drill holes to outline the deposit.

In 1963, Hudson Bay Mining and Smelting sank a 356 m vertical shaft to the orebody. In 1968, the shaft was deepened to 418 m. Production commenced in 1969 at a rate of 190 tonnes per day. By 1970, production rates had reached 250 tonnes per day. Mining ceased in 1972 when the ore body was exhausted.

ML 5207 was allowed to lapse and Hudson Bay Exploration and Development staked the former minesite as S-99602 on 11 May 1992. Between 1993 and 1994, Hudson Bay completed ground HLEM and magnetic surveys on the CAB 35 grid which covers the minesite. In 1994, Hudson Bay completed rock sampling on the CAB 35 grid. In the following year, Hudson Bay completed a ground TDEM survey on the CAB-35 grid.

6.20.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.20.5.1 General

The Flexar Mine site was inspected on 23 October 2002. Approximately 2 cm of snow covered nearly all of the ground surface. Direct site access was achieved by vehicle using the Birch Lake Road. Several houses are located within about 1 km of the site, situated between the east shore of Birch Lake and the Birch Lake Road.

The site is a 1 hectare clearing on the east shore of Birch Lake, bounded to the north by a 25 m high hill. The site itself has been reclaimed and graded level with finely crushed waste rock. The west margin of the site slopes gradually toward the lake.

The site has been used relatively recently as a sawmill, however, it was not in operation during the site visit, nor were there any signs indicating ownership. Equipment has been abandoned onsite, with some logs and cut lumber also left onsite. A small fishing boat has been left for storage on the shoreline, and a fishing hut further on the site. Conifer forest of moderate density covers the hill and lands surrounding the site. The site itself is barren of vegetation.

A concrete foundation, likely related to past mining operations, is located 200 m south of the mine site clearing along the shore of Birch Lake beside a 10 m high barren outcrop hill. Nearby is a boat landing with road access connecting to the Birch lake Road.

6.20.5.2 Mine Workings

All mine workings have either been removed, sealed or covered by waste rock. No openings were found. No public safety hazards were identified.

6.20.5.3 Waste Rock / Tailings

Waste rock covers the 100 m by 100 m site to an unknown depth, has been graded level, and does not present a public safety hazard. The depth of waste rock may be shallow since bedrock outcrops are visible at the northwest end of the site. Based on an average depth of 1 m, the total volume of waste rock likely exceeds 10,000 m^3. It is not known if the waste rock extends into the adjacent lake, however, more than 270,000 tonnes of ore was mined which should result in more waste rock at the site than was observed.

The waste rock was composed of 97% light-brown sand (having an orange hue), 2% rock fragments (typically 1 cm size) and 1% clay. Large broken pieces of rock (5 cm – 15 cm), consisting of unmineralized and sulphide stained chloritic schist makes up about 5% of the total observable waste rock. The appearance of the finely crushed waste rock suggests that the potential for acid rock drainage is enhanced.

A sample of the finely crushed waste rock was taken and submitted for analysis to determine its acid generating potential. The sample was collected from 10 different spots on the western third of the site. Since the ground surface was frozen, the sample could only be collected to a depth of 5 cm. Analysis shows the waste rock is heavily mineralized with iron, arsenic, aluminum, and sulphide minerals. The waste rock is heavily acid producing. Table 6.20-1 provides the analytical results.

The location and gentle slope of the waste rock would result in runoff from precipitation and snowmelt into adjacent Birch Lake. A small narrow ditch (see Photograph No. 6.20-5) has formed on the slope due to the runoff.

South of the mine site, near the pumphouse concrete foundation, is a boat landing graded with possible finely crushed metavolcanic waste rock.

6.20.5.4 Debris

There is a large amount of debris scattered about the site. Debris from the former sawmill operation includes the sawmill platform and motor, a wood planar, and small piles of cut lumber and logs. A half-full 205-litre steel fuel barrel remains attached to the motor. Dark staining was evident at the base of the motor and on the wood platform, and appears to have been from the leaks or spills of lubricating oil or fuel.

Plastic pails (22-litre capacity), a 70-litre steel barrel and a 205-litre steel barrel have been discarded beside the sawmill motor. Three of the plastic pails contained used hydraulic oil, part of which has spilled and stained the surrounding ground surface. The other six pails were empty. The 70-litre barrel was open and half-filled with rainwater.

Two steel fuel tanks (2,500-litre and 17,000-litre capacity) have been discarded along the southeast edge of the site. Each tank was solid, non-perforated, the bungs closed and appear to be empty. No staining was observed on the tank inlets and outlets or on the surrounding ground.

Table 6.20-1

Flexar Waste Rock

Parameter	Units	Result
Al2O3	%	
Iron	ppm	71,300
Fe2O3		
CaO	%	
Magnesium	%	5,100
MgO	ppm	
K2O	%	
Sodium	ppm	950
Na2O	%	
Calcium	ppm	2,700
Nickel	ppm	12
Lead	ppm	25
Arsenic	ppm	24
Aluminum	ppm	12,200
Gold	ppm	
Silver	ppm	0.8
Mercury	ppm	
P2O5	%	
Zinc	ppm	200
Cadmium	ppm	1.6
Cobalt	ppm	19
Molybdenum	ppm	1
Manganese	ppm	210
MnO %	%	
Chromium	ppm	97
Potassium	ppm	3,000
Vanadium	ppm	44
Boron	ppm	<1
Barium	ppm	100
Beryllium	ppm	<0.5
Copper	ppm	3,200
Titanium	ppm	710
TiO2 %	%	
Zirconium	ppm	6.7
Yttrium	ppm	
Lanthanum	ppm	
Thorium	ppm	
Strontium	ppm	28
Phosphorous ppm	ppm	260
Sulphate, Acid Soluble (%)	%	1.34
Sulphide ppm	ppm	10,900
Sulphur (%)	%	1.54
Acid Neut g $CaCO_3$/kg	g CaCO3/kg	-1.3
Acid Producing g $CaCO_3$/kg	g CaCO3/kg	34
Net Acid Generation	g CaCO3/kg	35.5
pH, Paste pH units	pH units	4.03

Other assorted debris included a burning barrel, a heating stove, several automobile tires and pieces of scrap lumber and litter. Two scrap automotive chassis have been discarded in the bush immediately south of the site. A 1975 license plate was on one of the chassis.

A steel plate (1.2 m by 2 m) has been discarded in the lake, beside the pumphouse concrete foundation, located south of the mine site. The plate could be a hazard to boats and snowmobiles.

6.20.5.5 Site Buildings

There are no buildings or ruins within the mine site area. A concrete foundation (4 m by 5.5 m by 1.2 m high) is situated along the shore of Birch Lake, 200 m south of the mine site. The location and size of the foundation suggest that it was the location of a former pumphouse supplying water to the mine buildings. The condition of the remnant foundation is good, with no openings, and does not present a public or environmental hazard.

6.20.6 History of Previous Inspections

No record of previous inspection was located. However, the site appears to have been recently occupied by the sawmill operation.

6.20.7 Risk Assessment Ranking

Public Safety Assessment	9
Environmental Assessment	8.5
Combined Total Assessment	17.5
Ranking	10/26

Given the: (1) unknown quantity of waste rock on the site (and possibility that some has been deposited into adjacent Birch Lake); and (2) development of a drainage rill across the sulphidized waste rock that channels surface run-off into Birch Lake, two points were attributed to the “additional environmental risks” category.

6.20.8 Recommended Follow-up

Overall, the site does not pose a public safety hazard since the site has been decommissioned leaving no shaft or other exposed underground openings. The extent of the hydrocarbon fuel and lubricant impact to the subsurface immediate to the sawmill motor may need to be assessed. For aesthetic reasons, the sawmill equipment and scrap materials should be removed and disposed of property.

Given the high acid generation potential of the waste rock, efforts should be made to consolidate the waste rock and construct surface diversion works so that runoff is directed away from nearby water bodies.

Photograph 6.20-1. Flexar Mine-Discarded Fuel Tanks-October 23, 2002

Photograph 6.20-2. Flexar Mine-Staining at Sawmill Motor Base-October 23, 2002

Photograph 6.20-3. Flexar Mine-Spilled Fuel Near Sawmill Motor Platform-October 23, 2002

Photograph 6.20-4. Flexar Mine-Crushed Waste Rock-October 23, 2002

Photograph 6.20-5. Flexar Mine-Abandoned Sawmill with Motor, Discarded Pails and Barrel-October 23, 2002

Photograph 6.20-6. Flexar Mine-Concrete Foundation at Shoreline-October 23, 2002

Photograph 6.20-7. Flexar Mine-Abandoned Wood Planar-October 23, 2002

Photograph 6.20-8. Flexar Mine-Panoramic View of Former Minesite Looking North-October 23, 2002

6.21 Bearcat Showing

6.21.1 Location and Access

Site Inspection: 24 October 2002

Location: NTS Map Sheet 63 L/9

UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 38’ 50” lat 102° 11’ 10” long	6058957 m N 681559 m E	6059073 m N 681526 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located on the south shore of Missi Island, on Amisk Lake, 7 km west from the community of Denare Beach. Site access is gained by boat at the shoreline beside the mine workings.

The site location is shown in Figure 6.21-1. The site plan is shown in Figure 6.21-2. Photograph 6.21-1 shows the site.

6.21.2 Property Information and Ownership

Property: CBS 7366 (formerly: CBS 3103)
Saskatchewan Mineral Deposit Index Number: 0160
Location: Amisk Lake – south shore of Missi Island
Owner(s): SMDC
Commodity: Py **Associated Commodities:** An
Deposit Type: Adit or Shaft

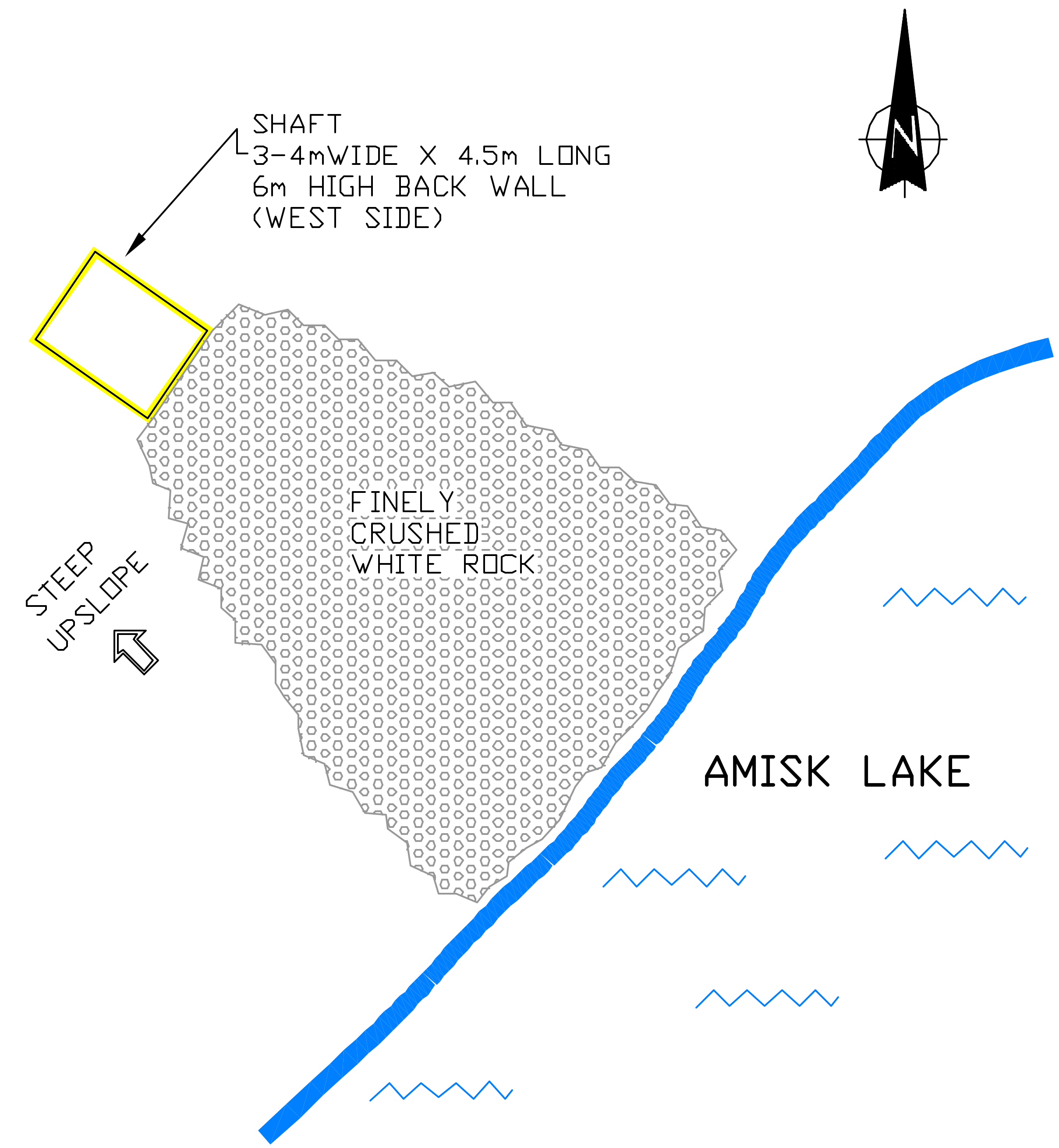
6.21.3 Geology

The showing is located on the south shore of Missi Island approximately 7.2 km (4.5 miles) southwest of Denare Beach.

DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
BEARCAT SHOWING & PROSPECT SHAFT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.21-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

BEARCAT SHOWING AND PROSPECT SHAFT-SITE PLAN
(NOT TO SCALE - DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.21-2**

The showing, which is exposed in one deep trench and a flooded exploration shaft, consists of mineralized units of brecciated and esite to basalt, which contain irregular veinlets and lenses up to 25.4 cm (10 inches) wide, of massive, coarse-grained pyrite, and stringers and lenses of very fine grained quartz and white to dark grey calcite. The andesite is located within a fault zone, which strikes 045° and dips 75°E to vertical, and is 4.9 m (16 ft) wide. The wall rock is silicified and contains very fine grained, disseminated pyrite. One of the basalt-hosted mineralized bands, which is 10 to 30 cm (3.9 to 11.8 inches) wide, is made up of massive pyrite and up to 0.5% euhedral arsenopyrite. In 1985, SMDC grab sampled this band. Analytical results can be obtained from the Saskatchewan Mineral Deposit Index.

6.21.4 Exploration History

A prospect shaft has been sunk in a fault zone which strikes 045° and dips 75° to 80° SE. The shaft intersected the lithologies discussed above. In 1960, the Keevil Mining Group completed a helicopterborne EM and magnetic survey that covered the showing area. In 1977, SMDC staked CBS 3103 over the showing. The property was reconnaissance mapped.

On March 27, 1983, SMDC staked the Bearcat Showing area as CBS 7366. In the summer of 1985, SMDC re-sampled the Bearcat Showing. In 1989, a Cameco (50%)-Husky Oil (50%) partnership completed a regional till sample program in the general showing area. No significant values were returned.

6.21.5 2002 Inspection-Site Description

6.21.5.1 General

The site was inspected on 24 October 2002. Site access was achieved by boat. There was a thin patchy snow cover on the sun exposed south slopes, and approximately 2 cm of snow covering about 80% of the ground surface in the surrounding forest.

The site is situated on the steep slope of a 30 m high hill adjacent to the lake, and 20 m in from the shore. A waste rock pile is easily visible from the lake, but the shaft opening cannot be seen from the lake. There was no evidence of recent visitation. Forest vegetation is sparse along the hill side and consists of mature pine, birch and poplar.

The Saskatchewan Mineral Deposit Index (SMDI) inventory reports that a single deep trench was also excavated, but it was not found during the visit. A inspection along the shoreline, within 200 m of the general site location, did not reveal any other workings visible from the lake.

6.21.5.2 Mine Workings

The shaft opening is 3 m to 4 m wide by 4.5 m high, and is about 8 m above the lake surface. The backwall of the shaft (against the bedrock) extends 6 m above the opening. The measured maximum depth of the shaft (excluding the backwall) was 2.4 m, with a leaf-filled soft bottom. Water had accumulated to a depth of 0.7 m at the shaft bottom. The shaft water level was above the adjacent lake. The water in the shaft appears to be the result of precipitation and snow melt accumulation. When the shaft water level is sufficiently high it could drain through the waste rock into the adjacent Amisk Lake.

A water sample from the shaft was collected for laboratory testing. Analytical results are provided in Table 6.21-1. Field measurements of physical parameters for the water sample were as follows:

Date:	21 October 2002
Time:	10:00 a.m.
pH	8.22
Conductivity:	450 µS/cm
Temperature:	+ 2.1^{o}C

The shaft water quality is generally good. There are no parameters exceeding Saskatchewan Surface Water Quality Objectives for the Protection of Aquatic Life and Wildlife. Arsenic is slightly elevated (0.70 mg/L).

Although the shaft exposes an intense sulphide stained shear zone, the walls are stable. The surrounding rock is heavily jointed but loose rock was not readily apparent.

Spruce trees, 3 to 5-cm in diameter are growing along the shaft edge and obscure part of the shaft opening particularly from the upslope direction. A potential fall hazard is therefore present, if the working is approached from the uphill side. Large wildlife may have difficulty escaping the shaft should they fall in.

Table 6.21-1
Bearcat Shaft-Water Quality

Parameter	Units	Result	SSWQO [1]
Total Trace Metals			
Aluminum (Al)	mg/L	0.006	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	0.700	0.05
Boron (B)	mg/L	0.018	
Barium (Ba)	mg/L	0.006	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.002	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.010	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) [4]	mg/L	0.007	0.025
Phosphorous (P)	mg/L	0.040	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.008	
Strontium (Sr)	mg/L	0.076	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.009	0.05
Total Major Metals			
Calcium (Ca)	mg/L	90.0	
Potassium (K)	mg/L	1.80	
Magnesium (Mg)	mg/L	14.0	
Sodium (Na)	mg/L	1.70	
Iron (Fe)	mg/L	1.40	1
Manganese (Mn)	mg/L	0.230	
Silicon (Si)	mg/L	3.50	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	6.90	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 [2]
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 [3]

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

6.21.5.3 Waste Rock

Waste rock from the shaft has been placed on the steep bedrock slope, but is generally stable and does not appear to present a public safety hazard. The toe of the slope comes within 3 m of the shore. The pile covers an area that is about 10 m long, 3 m wide at the crest, 7.5 m wide at the toe, and about 0.3 m deep. The estimated volume is 15 m^3 to 38 m^3 based on observed size of the pile and excavated dimensions of the shaft, respectively. The waste rock is finely crushed, has an intense sulphide stain, and contains coarser pebble-sized pieces of massive pyrite mineralization. Surface run-off would be into the adjacent lake. Scrub vegetation encroaches along the edges of the waste rock.

A sample of the waste rock was collected for analysis. Analytical results are shown in Table 6.21-2. The waste rock is highly mineralized in iron, magnesium, calcium, aluminum and sulphide minerals. The rock is highly acid producing.

6.21.5.4 Debris

No debris was observed.

6.21.5.5 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.21.5.6 Site Buildings

No buildings or ruins were observed.

6.21.6 History of Previous Inspections

No record of previous inspection was located.

Table 6.21-2

Bearcat Site-Waste Rock

Parameter	Units	Result
Al2O3	%	
Iron	ppm	23,800
Fe2O3		
CaO	%	
Magnesium	%	6,300
MgO	ppm	
K2O	%	
Sodium	ppm	350
Na2O	%	
Calcium	ppm	46,000
Nickel	ppm	90
Lead	ppm	7
Arsenic	ppm	71
Aluminum	ppm	6,900
Gold	ppm	
Silver	ppm	0.7
Mercury	ppm	<0.05
P2O5	%	0.05
Zinc	ppm	27
Cadmium	ppm	<0.5
Cobalt	ppm	53
Molybdenum	ppm	4.6
Manganese	ppm	470
MnO %	%	0.069
Chromium	ppm	45
Potassium	ppm	3,700
Vanadium	ppm	12
Boron	ppm	<1.0
Barium	ppm	6.9
Beryllium	ppm	<0.5
Copper	ppm	130
Titanium	ppm	35
TiO2 %	%	0.1
Zirconium	ppm	1.8
Yttrium	ppm	1
Lanthanum	ppm	11
Thorium	ppm	3
Strontium	ppm	13
Phosphorous ppm	ppm	50
Sulphate, Acid Soluble (%)	%	6.01
Sulphide ppm	ppm	182,000
Sulphur (%)	%	20.2
Acid Neut g $CaCO_3$/kg	g CaCO3/kg	83.3
Acid Producing g $CaCO_3$/kg	g CaCO3/kg	570
Net Acid Generation	g CaCO3/kg	487
pH, Paste pH units	pH units	5.83

6.21.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	10
Combined Total Assessment	20
Ranking	5/26

The site is easily visible from the lake and the open prospect shaft is accessible, thus increasing the chances of a fall into the shaft. The downslope approach to the shaft is obscured by trees and appears suddenly; therefore, 1.5 points were attributed to the "additional public safety risks" category.

Given that; (a) accumulated water in the shaft is in contact with sulphide mineralization; and (b) shaft water could potentially seep into Amisk Lake, a total of two points were attributed to the "additional environmental risks" category.

6.21.8 Recommended Follow-up

Follow-up activities should focus on sealing the prospect shaft since it poses a public safety risk due to its easy accessibility. The shaft should be secured with a concrete cap or filled-in with local unmineralized rock.

Photograph 6.21-1. Bearcat Showing and Prospect Shaft-Shaft and Waste Rock Area-October 24, 2002

6.22 Lucky Strike Mine

6.22.1 Location and Access

Site Inspection: 24 October 2001

Location: NTS Map Sheet 63 L/9
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^o 39' 00" lat 102^o 08' 55" long (general site location)	6059364 m N 683965 m E (general site location)	Grand Lode 6059604 m N 684005 m E Lucky Strike 6059458 m N 683947 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located at the south end of a peninsula situated at the southeast end of Missi Island, on Amisk Lake, 5 km southwest from the Community of Denare Beach. Site access is gained by boat and then a short walk from the shoreline through the bush and up hill to the workings.

The site location is shown in Figure 6.22-1. The site plan is shown in Figure 6.22-2. Photograph Nos. 6.22-1 to 6.22-5 show the site.

6.22.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0102
Property: CBS 7366 (was: CBS 3103; SANDY claims; LUCKY STRIKE 1; ADELAIDE claims
Location: Amisk Lake – peninsula on southeast side of Missi Island
Owner(s): Cameco
Commodity: Au **Associated Commodities:** An
Deposit Type: Outcrop

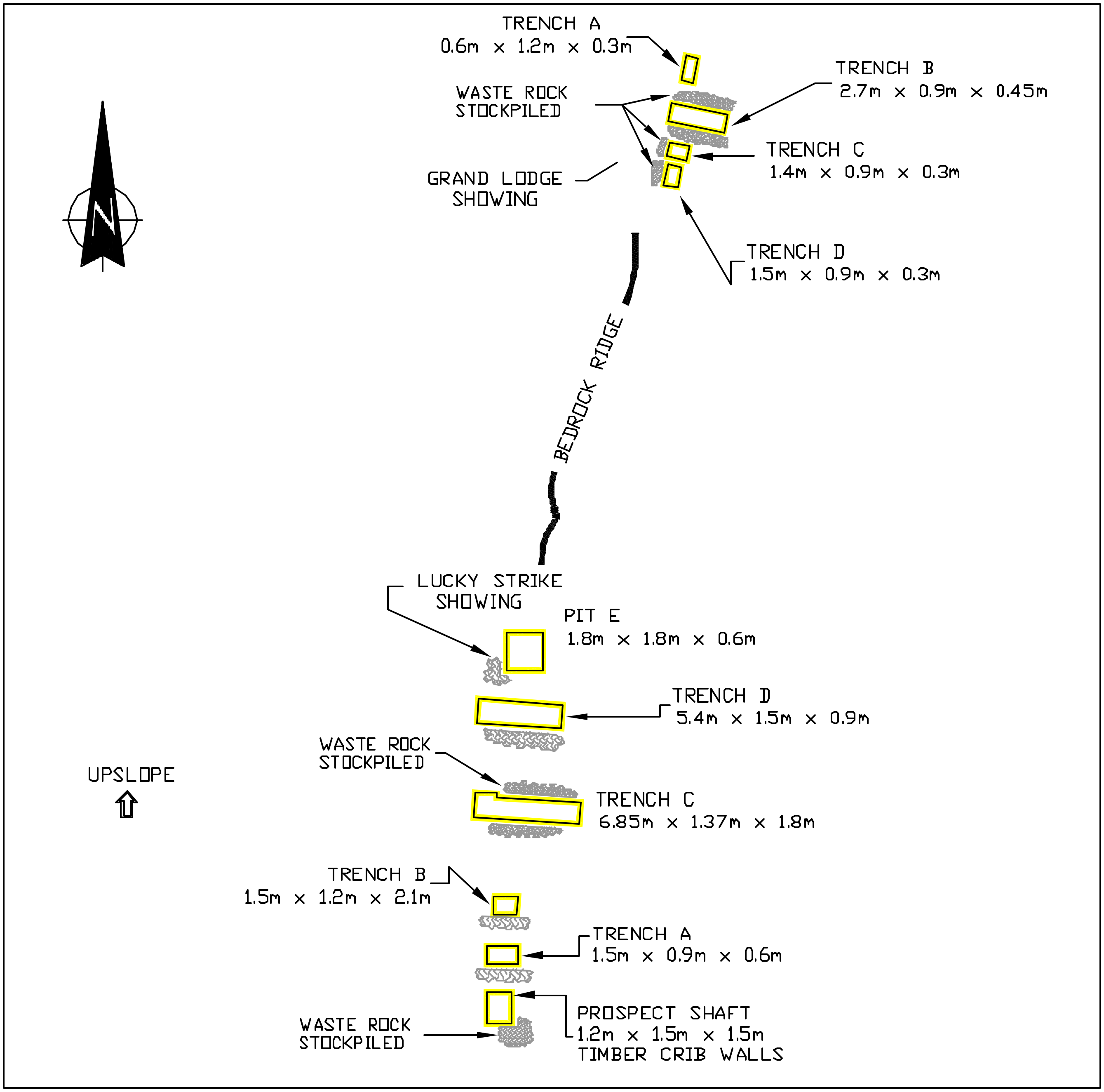
6.22.3 Geology

The two showings are located in two sets of trenches on a long south-trending peninsula on the southeast side of Missi Island. The southern (Lucky Strike) showing is located in the center of the peninsula 243.8 m (800 ft) north of the tip. The Grand Lode Showing is located 91.4 m (300 ft) north of the Lucky Strike Showing. The showings area is underlain by porphyritic quartz diorite in contact with Amisk Group volcanics.

DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
LUCKY STRIKE MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.22-1



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

LUCKY STRIKE MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.22–2

The northern showing, also known as the Grand Lode Showing, or SMDC C Zone, was discovered on the ADELAIDE claims 91.4 m (300 ft) north of the Lucky Strike Showing. The showing, which is exposed in trenches C-1 to C-4, consists of a 21.3 m (70 ft) long, 25.4 cm (10 inch) wide vein hosted by porphyritic to non-porphyritic ryholite dykes which intrude massive to pillowed basalts. The north-south striking glassy quartz vein contains ankerite, sericite, disseminations and blebs of pyrite and chalcopyrite and minor gold and silver. The carbonatized wall rock contains minor pyrite. A conductor drilled to the north of the showing intersected two intervals up to 1.5 m (5 ft) wide of massive pyrite-pyrrhotite hosted by andesitic chlorite-sericite schist and graphite schist.

The southern showing, also known as the Lucky Strike Showing, or SMDC B Zone, is exposed in trenches B-2 to B-7 and a shaft. The showing consists of a (2 to 10 inch) wide by 91.4 m (300 ft) long quartz vein with several irregularly oriented offshoot veins. The veins lie entirely within a rhyodacitic dyke host rock. The mineralization consists of disseminations and blebs of pyrite and chalcopyrite and minor gold and silver. Tourmaline can be found along fracture faces in the main vein.

In 1984, SMDC located a third showing. The SMDC A Zone, which is exposed in a single trench, is located 120 m (393 ft) southwest of the Lucky Strike Showing. The showing consists of a single irregular massive ankerite-quartz vein that is several meters long and about 1.5 m (4.9 ft) wide. The vein is hosted by a rhyodacite dyke that intrudes basalt. The mineralization at this showing consists of disseminations and blebs of pyrite and chalcopyrite. SMDC did not sample the vein.

In 1984, SMDC sampled the two main showings. Analytical results can be obtained from the Saskatchewan Mineral Deposit Index (SMDI).

Cameco described the C Showing as consisting of disseminated to semi-massive pyrite in a siliceous and sericitic medium grey rock which occurs at the north-striking contact between rhyolite and pyrite-mineralized dacite porphyry. There is visible sphalerite and galena in grab samples. Alteration present involves chloritization, magnetitization, and dolomite depletion of the quartz-feldspar porphyritic rhyolite.

6.22.4 Exploration History

The showing is exposed in two sets of trenches. The property was owned and developed by the Northwest Gold Mining Syndicate Ltd. of Flin Flon until 1949.

The original Lucky Strike on the ADELAIDE claims were restaked as the SANDY Claims in 1950 and later as the LUCKY STRIKE group optioned to A.L. Parres in 1955. The development work consists of a 3.7 m (12 ft) pit and 6 shallow rock cuts as well as 27.4 m (90 ft) of diamond drilling.

In 1955, A.L. Parres drilled a conductor on the LUCKY STRIKE No. 15 claim to the north.

In 1960, the Keevil Mining Group completed a helicopterborne EM and magnetic survey that covered the showing area.

In 1977, SMDC staked CBS 3103 over the Lucky Strike Showing. SMDC regionally mapped the property.

On 27 March 1983, SMDC staked the showing area as CBS 7366. In 1984, SMDC detail mapped and lithologically sampled the showing.

6.22.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.22.5.1 General

The Lucky Strike Mine site was inspected on 24 October 2002. Site access was achieved by boat (launched from Denare Beach) and then a 150 m walk from the shoreline to the site. There was a 2 cm thick snow cover over much of the ground surface where forested, and patchy snow on the sun exposed hill top. There was no evidence of recent visitation.

The original workings (Grand Lode Showing and Lucky Strike Showing) at the site are situated near the top of a steeply sloped hill, 55 m in height. Cliffs occur on the east side of the hill. The Grand Lode Showing is near the crest of the hill, and the Lucky Strike Showing begins in a valley with workings exposed going uphill to the north. Conifer forest covers the slopes of the hill, and is sparse on the rocky hill top.

The area of the newer SMDC A Zone is in an area of low rising bedrock ridges found west of the large hill. Moderate to dense conifer forest covers this area . A search did not locate the “single trench” reported in the SMDI inventory, although moss blankets were observed to have been stripped off the bedrock (indicative of past exploration activities) in areas.

6.22.5.2 Mine Workings

Mine workings at the Grand Lode Showing consist of four short and shallow rock trenches. Figure 6.22-2 shows the measured dimensions of each trench. The trenches range in length from 1.2 m to 2.7 m, and nominally are 1 m wide and deep. The trenches were dry. Quartz veining, hosted by a felsic volcanic rock, is exposed in the trenches. No public safety hazards were noted regarding these very shallow workings.

Mine workings at the Lucky Strike Showing consist of a prospect shaft, four rock trenches and a shallow pit. Figure 6.22-2 shows the measured dimensions of each excavation. The shaft is 1.5 m deep and flooded. Timber shoring remains in place along the shaft walls. Moss and soil overhangs the lip of the shaft opening. The trenches are variable in length (1.5 m to 6.7 m) with a depth (0.6 m to 2.1 m). The sloped trench walls are stable, scrub vegetation grows along the edges, and a minor amount of frozen precipitation water had pooled in the bottom of the trenches. The trenches do not pose a serious public safety due to their relatively shallow depths, open visibility, and distance from the shoreline, however, there is a trip / fall-in hazard associated with the prospect shaft. Large animals may not be able to escape from the prospect shaft, if they accidentally fall into it.

6.22.5.3 Waste Rock

At the Grand Lode Showing, a minor amount of coarse waste rock is located beside the trenches.

At the Lucky Strike Showing, small amounts of coarse waste rock are piled along the trench edges. The pile rock is 0.5 m to 1 m high, broadly sloped and stable. The volume of waste rock is commensurate with the size of the excavations. In total, a volume of 33 m^3 of waste rock is estimated. The waste rock is a felsic volcanic mixed with quartz veining. Sulphide mineralization was not readily evident. Scrub vegetation has encroached along the edges of the waste rock piles. Coarse waste rock has been piled around the opening of the prospect shaft. Based on the size of the exposed shaft, a minimum volume of 3 m waste rock is estimated.

The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.22.5.4 Tailings

No tailings were observed. The workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.22.5.5 Debris

No debris was observed.

6.22.5.6 Site Buildings

No buildings or ruins were observed.

6.22.6 History of Previous Inspections

No record of previous inspections was located.

6.22.7 Risk Assessment Ranking

Public Safety Assessment	8.5
Environmental Assessment	3
Combined Total Assessment	11.5
Ranking	20/26

Soil overhangs and loose waste rock at the shaft opening could increase the trip and fall-in hazard into the flooded prospect shaft at the Lucky Strike Showing. Therefore, 1.5 points were attributed to the “additional public safety risks” category.

6.22.8 Recommended Follow-up

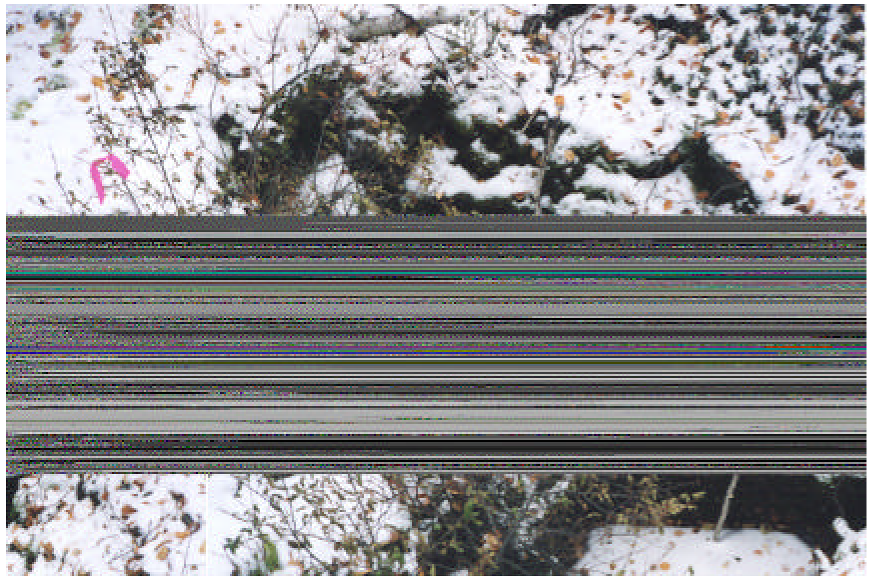
Closure of the prospect shaft should be considered, even though public visitation to the site is unlikely due to its distance and location from the shoreline. The waste rock beside the shaft could be hand-shoveled into the opening thereby reducing any fall hazard. The other trenches and pits are relatively shallow, easily recognizable when approached, and thus public safety is not a concern.

Photograph 6.22-1. Lucky Strike Mine-Pit 'E'-October 24, 2002

Photograph 6.22-2. Lucky Strike Mine-Trench 'C'-October 24, 2002

Photograph 6.22-3. Lucky Strike Mine-Trench 'B'-October 24, 2002

Photograph 6.22-4. Lucky Strike Mine-Shaft Area'-October 24, 2002



Photograph 6.22-5. Lucky Strike Mine-Trench 'A'-October 24, 2002

6.23 Vista (Bootleg) Mine

6.23.1 Location and Access

Site Inspection: 25 and 29 October 2001

Location: NTS Map Sheet 63 K/12
UTM Zone: 14U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 43' 03" m N 101° 54' 27" m E (general site location)	6062020 m N 699185 m E (general site location)	Decline 6066925 m N 312803 m E Tailings Area 6066702 m N 312204 m E

* Location recorded by GPS during Year 3 field program. Suspected Decline entrance.
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 4.5 km south of the Town of Creighton, between Douglas Lake and Bootleg Lake. The site is accessible by driving 2.8 km south on the Douglas Lake Road, beginning from Highway 167. A 300 m long bush road (3.3 km south on the Douglas Lake Road) leads to the tailings area.

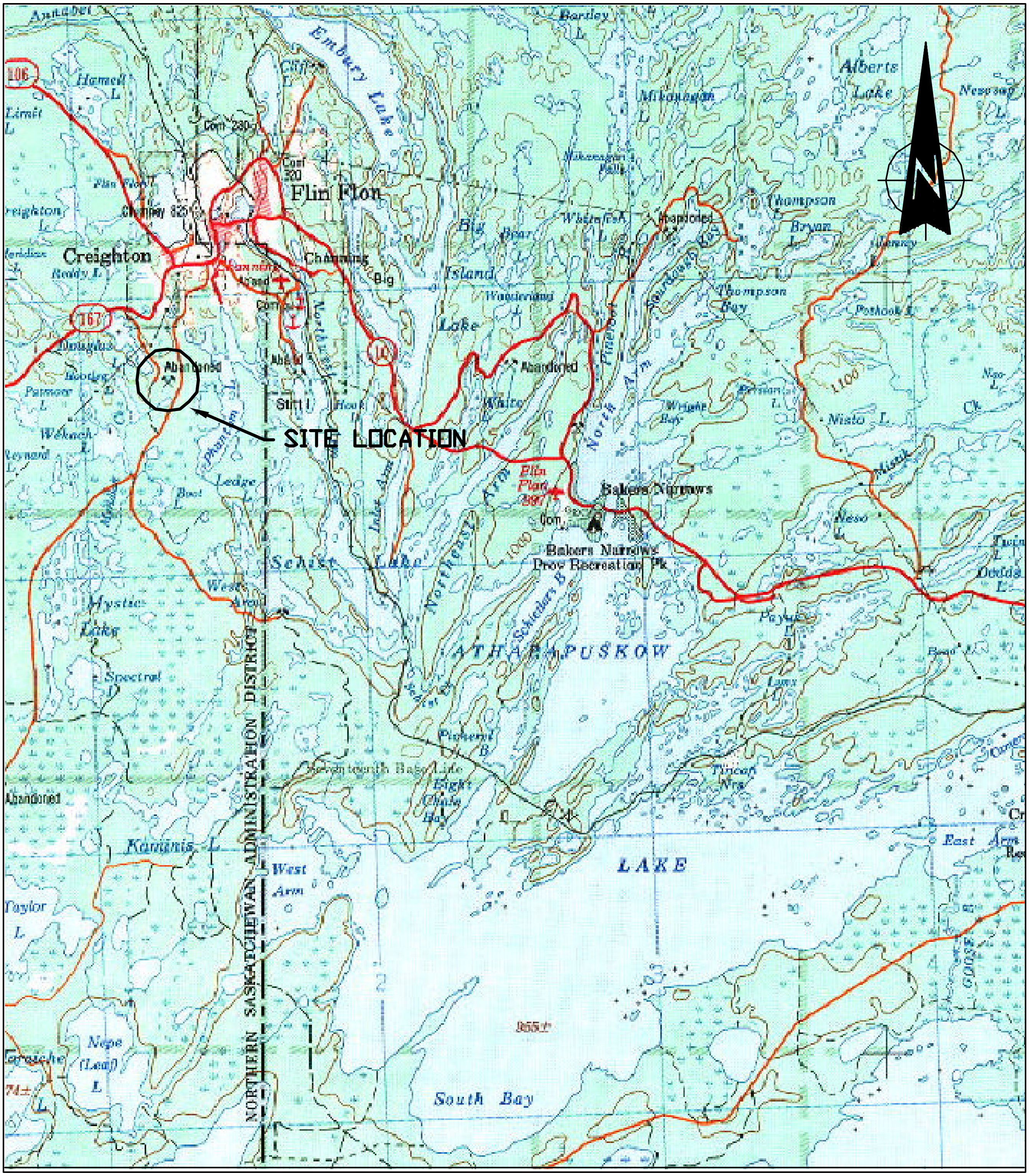
The site location is shown in Figure 6.23-1. The site plan is shown in Figure 6.23-2. Photograph Nos. 6.23-1 to 6.23-9 show the site.

6.23.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0011
Property: formerly: ML 5087; HUNT claims
Location: Bootleg Lake area
Owner(s): Open – see Section 6.28.4 for previous owners
Commodity: Au **Associated Commodities:** Ag; Py; Pb; Zn; Cu; An
Deposit Type: Outcrop

6.23.3 Geology

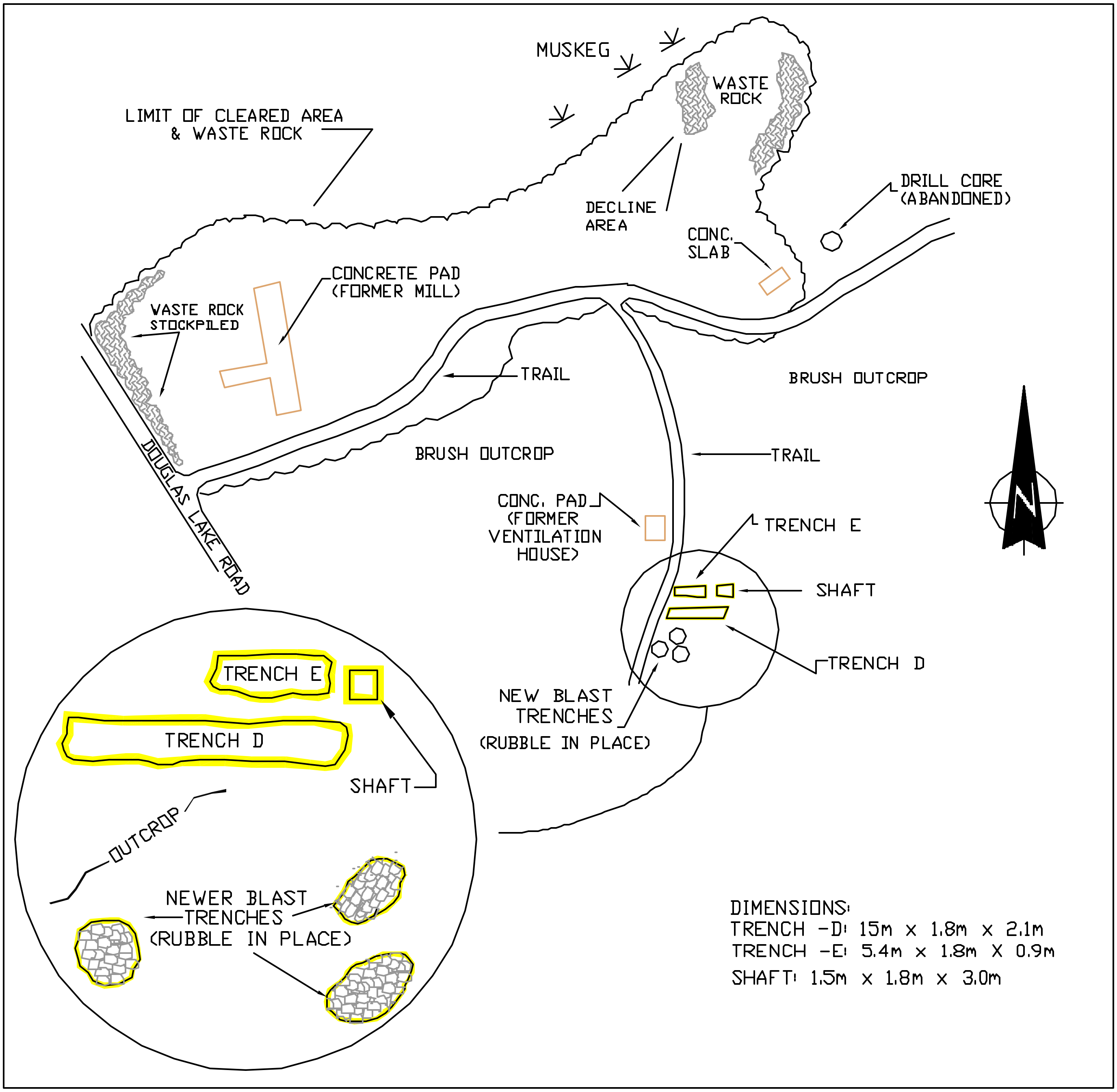
The mesothermal Rio Deposit consists of a gold-bearing quartz-carbonate zone of dislocation and hydrothermal alteration approximately 30.5 m (100 ft) wide on the Rio Fault trend. This zone of flexure corresponds to a strike change in the fault trend from 051° to 030°/75°NW, at which point the widened fault breaks up into a series of en echelon faults, cutting



DRAWING DEVELOPED FROM
SCANNED NTS MAP 63L/9.

SITE LOCATION PLAN
VISTA (BOOTLEG) MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.23–1



LEGEND:

- Roads/Trails
- Mine Workings
- Waste Rock
- Body of Water
- Scrap Material/Debris/Refuse
- Building/Foundation
- Tailings
- Natural Ground Surface
- Gamma Readings (µSv/hr.) 0.25
- Water Sample Location
- Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

VISTA (BOOTLEG) MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.23–2

amygdaloidal andesite and andesitic flow breccia. Mineralization consists of chalcopyrite, sphalerite, galena, minor pyrite, and gold in quartz veins and stringers.

The rocks around the deposit comprise a westerly-facing homoclinal sequence of basalt and debris flows with minor extrusive and intrusive bodies of rhyolite and dacite. This sequence has been intruded by the Boot Lake pluton and the Phantom Lake granite. Around the deposit there is widespread evidence of fracturing, presumably as a result of movements on the Rio Fault. Basalt occurs as fine grained, dark green massive flows on both the hanging wall and footwall of the Rio Fault. Pillow lavas are often recognized. Flow breccias are also common. Plagioclase phyric debris flows form the major rock unit on the hanging wall side of the Rio Fault. Fragment types include amygaloidal basalt, plagioclase and plagioclase-pyroxene 'phyric' basalt, aphyric basalt, felsic epidote fragments, and esite, dacite and rarely, rhyolite. Fragments vary in size from 1.5 mm to 75 cm and in the shape from well rounded to angular. Bedding is rare, although occasional small silt-filled scour channels and pockets to fine-grained bedded sediments are observed. These features provide inconclusive indications of a westerly-facing direction. Interlayered with the debris flows are narrow lenses of intermediate to acid fragmentals consisting of rhyolite, dacite and basaltic fragments in a basaltic matrix. White weathering dacitic to rhyolitic dykes occur in the western half of the mapped area.

Several generations of gabbroic dykes cross cut all the rock units in the area excluding the dacite dykes and the Phantom Lake granite. Some are obviously feeders for the overlying flows; however, others also cut cross the Boot Lake Pluton. The Boot Lake Pluton is a complex multiphase body ranging in composition from gabbro to granodiorite but is composed mostly of massive grey diorite and granodiorite. Where the pluton has an intrusive rather than fault-controlled contact, several intrusive phases are evident. The most common is a medium grained, massive, equigranular amphibolite (metagabbro). Massive quartz diorite also occurs Porphyritic dioritic dykes as well as felsic epidote-rich and aplite dykes cut the border zone of the intrusion. Diorite dykes intruding basalt become mafic away from the pluton. The Phantom Lake Granite occurs as a series of irregular dykes which cross cut all of the rock units. The Rio Fault strikes 110° and dips 75°NW. To the northeast and southwest of the mineralized area, the fault appears as a narrow zone of intense shearing and deformation. Northwest of the mineralized zone, there is a little alteration and shear planes are coated with chlorite and ankerite. Southeast of the mineralized zone, alteration consists of intense silicification and ankeritization and abundant quartz veining is characteristic. In the mineralized area there is no single distinct fault surface, but instead there is a wide (90 m) zone of intense fracturing and alteration.

The gold-bearing pyritic orebodies lie within a wide zone of silicic-ankeritic (chert-carbonate) alteration along the Rio Fault. While the alteration associated with the mineralization is obvious and easy to trace, the pyrite-gold mineralization is less evident on surface. Discrete bands with disseminated, very fine grained pyrite aggregates occur within the chert-carbonate rock. Gold is present as very small blebs within or between pyrite grains and as discrete particles around pyrite aggregates. Other minerals noted are galena, sphalerite and chalcopyrite. Underground, alteration and stratigraphy seems to indicate two types of mineralization. The hanging wall mineralization contains bedded bands of mineralization, and lenses with up to 15% disseminated pyrite in the fine grained chert-carbonate alteration. A second type of mineralization consists of fine- to medium-grained pyrite aggregates which are commonly associated with fractures, veins of silicification, and rarely with quartz veins. This type of mineralization can assay up to 100 g/t but more commonly grades 34 g/t (1 oz/ton) over a few tens of centimetres.

Surface and underground work have identified three different alteration and vein associations. In all three, the gold occurs as inclusions in pyrite and along pyrite grain boundaries. The ore contains up to 15% pyrite plus traces of other sulphides. The ore zones vary in width from 0.6 to 10.7 m (2 to 35 ft) and are open down dip below 213.4 m (700 ft). Tests revealed a high recovery rate - gold extracted by direct cyanidation yielded 97.6%, flotation yielded 98.5%, and cyanidation of flotation concentrates yielded 98.4%. The composite head grade is 0.24 oz/ton Au.

The AJ Zone mineralization consists of a set of branching and en echelon quartz veins and associated alteration which is up to 2 m wide. The 0°/60°W dipping zone consists of early folded and boudinaged ankerite-quartz stringers and later massive and irregular quartz-ankerite ± tourmaline ± chlorite veins which host pyrite and gold mineralization. Proximal to the veining, one finds quartz-ankerite-albite-pyrite-chlorite alteration which appears brecciated. This zone of alteration has a sharp contact with the outer buff colored ankerite-quartz-chlorite-pyrite alteration zone. The WC Zone mineralization is associated with a series of 025°-trending lensoid bodies of intense alteration which overprint the host mafic volcanics and granite. The up to 20 m wide alteration zone consists of fine-grained quartz, ankerite, albite and pyrite. This zone is crosscut by an irregular series of auriferous quartz-pyrite veins.

The Phantom Lake Granite Dyke Zone consists of a series of north-south-trending tension-gash quartz veins which are located within (along the margins of) a dyke. The mineralized veining does not occur in adjacent metavolcanics. The dominantly quartz veining locally contains intergrowths of pyrite-ankerite-muscovite along the vein margins. Around the auriferous veins, the host granite is bleached, carbonatized, and hematized.

In 1987, a new zone - the B Zone, was discovered. The zone has a minimum strike length of 91.4 m (300 ft) and extends from surface to the 61 m (200 ft) level. The zone, which is open along strike and at depth, is mineralized over widths of up to 12.2 m (40 ft). Assays of 1.284 oz./ ton across an average width of 0.8 m (2.5 ft) for a drifted length of 14.0 m (46 ft) were returned. Two higher grade pockets of ore within the deposit have been identified down to the 22.9 m level (75 ft). Intersections encountered in these high-grade pockets of ore were encountered by drilling at the 107 m (350 ft) and 229 m (750 ft) levels. In 1982, the deposit was estimated to contain 93,600 tonnes of ore grading 0.29 oz/ton Au to the 107 m (350 ft) level. This includes higher grade pockets which contain an estimated 124,700 tonnes grading between 0.3 and 0.5 oz/ton Au. Deeper drilling indicated that the deposit continues down dip and down plunge past the 213 m (700 ft) level. Proven reserves of the combined Rio and Henning Maloney deposits indicate a possible 2 to 5 year mine life with 200,000 tonnes of ore grading 0.138 oz/ton Au plus 134,600 tonnes grading 0.450 oz/ton Au.

6.23.4 Exploration History

The Rio Zone was first staked in 1931 by P Maloney and A.J. Henning. They completed trenching and a small shaft. In 1933, Henning-Muloney Gold Mines acquired the HUNT claims. Between 1931 and 1940 the deposit was explored by a 2 compartment shaft (50 m), 17 drill holes and 12 trenches over a strike length of 182.9 m (600 ft). In 1940 to 1941, several ore shipments were made from a stope above the 15 m level. One 352 ton shipment returned 331 oz Au. Fire destroyed the buildings (date unknown). In 1960, C. Hogg completed diamond drilling over the claims. In 1964, Central Manitoba Mines reported 10 holes of diamond drilling and in 1967, C. Hogg completed further diamond drilling and a ground EM survey. In 1968, Flin Flon Mines acquired the property as part of the HUNT claims and obtained some interesting gold intersections while drilling weak conductors and known faults.

By 1970, 3684 m (12,087 ft) of drilling had been done on the Rio Zone, as well as ground electromagnetic and geochemical surveys. An Induced Polarization (IP) survey was completed over the area in 1973. Diamond drilling was completed in 1974 in order to extend the deposit along the Rio Fault. Rio Auro Mines Ltd. optioned ML 5087 in 1975. Flin Flon Mines re-acquired the property. In 1979, diamond drilling began to test anomalies outlined by the IP survey. This program continued into 1980. When an orebody was outlined. Flin Flon Mines received environmental approval for the mining projects in August, 1981.

Approval for development of a gold mine under a surface lease agreement was received from the Saskatchewan government in November, 1981. A decline began that same year. Production of the Rio deposit was scheduled to begin in 1982, but was delayed because of depressed gold prices. In 1982, Flin Flon Mines calculated the reserves for the Rio Deposit. No further work on the deposit has been reported through the assessment files but numerous news releases detail the history of the deposit through the 1980's. News releases indicated that gold production was to start by the final quarter of 1983. Flin Flon Mines purchased a 270 tonnes per day mill and planned on using ore from the Rio and Henning Maloney deposits, with subsequent ore from the Newcor deposit. It was decided that the deposits would allow a viable operation on the basis of a gold price of $300 US an ounce. Initial production was scheduled at 90 tonnes per day with production increases planned in stages to 270 tonnes per day. The deposit reserves were updated in 1984.

Deeper drill holes indicated that the orebody continued down-dip and down plunge to a depth of 213.4 m (700 ft) or more. An 259 m (850 ft) decline ramp to a vertical depth of 22.9 m (75 ft) and ultimately to depths of 45.7 m (150 ft) and 106.7 m (350 ft) was completed in 1982. Ore at the Rio Zone was planned to be processed first because it could be processed by cyanidation at recovery rates over 92%, yielding 0.25 oz/ton Au. The Rio ore contains approximately 15% pyrite and only minor other sulphides. The Rio ore zones, within which gold is associated with sulphides and quartz, vary in true width from .5 m to10 m and are open down dip below 213 m (700 ft). Two higher grade pods with values from 0.3 to 0.5 oz/ton Au were identified to the 228.6 m (75 ft) level.

Intersections returning similar values were encountered by drilling at 106.7 m (350 ft) and 228.6 m (750 ft). The Rio oreboby has been traced continuously along strike for 198.1 m (650 ft).

Start up was postponed until early 1984 due to technical problems but opened by mid-1984. The mine closed just three months after start up after experiencing recovery rates of only 60%. The mine went into receivership, and Vista Mines Inc. gained possession of the property soon after. In 1986, Vista Mines started phase 1 of an exploration project. A surface sampling program on the original discovery trenches and a geophysical survey on the deposit was completed in 1986. An underground diamond drilling program was planned to test the gold-bearing zones and to increase the mineable reserves. This resulted in the discovery of the "B" Zone. The drill program was followed by further surface and underground drilling to block out mineable reserves. Forty-one holes were completed during this program. Thirty seven of the holes intersected mineralization.

In 1987, a $3 million budget was approved for exploration on the deposit. A decline was started in July, 1987 to enable Vista to explore the lower mine levels and to allow further drilling to update the reserves.

A second phase of exploration was carried out. It consisted of 6,096 m (20,000 ft) of drilling including underground drilling. A third phase of exploration was planned to include bulk sampling and further drilling to upgrade presently known reserve categories and to test the inferred reserves to the 304.8 m (1,000 ft) level. Early in 1988, Vista reported encouraging test mill results from a 18,000 tonnes bulk sample that was taken from various levels down to the 121.9 m (400 ft) level.

6.23.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.23.5.1 General

<u>Mine and Mill Area</u>

The former mine and mill area of the Vista (Bootleg) Mine site was inspected on 25 October 2002. A follow-up visit, to locate evidence of the sealed decline entrance, was completed on 29 October 2002. Patchy snow, up to 4 cm thick, was present throughout the site.

Direct site access was achieved by vehicle using the Douglas Lake Road. A vehicle can be driven over much of the barren site, which is covered by waste rock with a limited amount of scrub bush. Drivable trails cross the site. Recent visitation was evident by vehicle tire tracks on the access road into the site. Local habitants frequently use the Douglas Lake Road as a dog-walk. The site has also been used for dumping of household refuse.

The site has been reclaimed, leaving only a large and level cleared area covered by broken waste rock with a few building foundation slabs remaining. Muskeg borders the site to the north, knobby outcrop to the east and south, with the Douglas Lake Road on the west margin. Clumps of scrub bush and small conifers have started to encroach within and along cleared edges of the site. Local topographic relief is less than 7m. The west half of the site was constructed on bedrock and is about 5m higher than the east half which was developed on waste rock placed adjacent to the muskeg. Surface drainage of precipitation and melt waters is northerly toward the muskeg.

Tailings Area

The closed tailings area of the Vista (Bootleg) Mine site was inspected on 29 October 2002 to determine its current condition. Direct site access was achieved via the Douglas Lake Road, and then a bush road that follows the east berm of the tailings impoundment.

Viewed from an aircraft, the tailings area appears to have been placed into a shallow lake that subsequently developed into a muskeg. Low, knobby, outcrop areas, border the west and east margins of the tailings impoundment area. A pond occurs on the north margin, and muskeg continues to the south. On the east side, coarse broken blast rock has been used to build up the containment berm. A rough road, on top of the berm, encircles the impoundment area. Topographic relief surrounding the area is less than 5 m, and is sloped inward to the tailings area. There did not appear to be an outlet which would allow water to drain out of the pond.

The south two-thirds of the tailings area is the former “impoundment pond”, and the northern one-third is the “retention pond”. The tailing site is clear of vegetation except some scrub brush on the dyke separating the pond from the rest of the tailings impoundment area

Visible from the air are numerous circular tracks across the surface of the tailings impoundment area, and which may be due to driving of cars or ATVs /snowmobiles.

6.23.5.2 Mine Workings

The cleared area of the former mill and mine workings is approximately 3 hectares, or 100 m wide and 300 m long. No open workings associated with recent mining operations were observed, however, older prospecting workings (trenches and a prospect shaft/pit) were found.

The decline has been sealed. A waste rock pile, containing up to 1 m sized pieces of rock, has been placed over the general area of the decline entrance. Large gaps between the broken rock make footing instable. No discharge of water was observed in the area of the sealed decline.

Several old and newer trenches, and a prospect shaft or pit, were found approximately 200 m south of the former decline on an outcrop. Broken blasted rock has been left in-place in three newer looking prospecting trenches (‘A’, ‘B’ and ‘C’) that range in width from 1.5 m to 3 m and in length from 3 m to 5.5 m. Trench ‘D’ (1.5 m-3 m wide x 15 m long x 2.1 m deep) and Trench ‘E’ (1.8 m wide x 5.5 m long x 1 m deep) are much older. The waste rock excavated and piled alongside the trench which is ingrown with scrub brush. A 3 m deep prospect shaft or pit (1.5 m x 1.8 m) is located beside Trench ‘E’, with ice in the bottom. No water discharge from the prospect shaft was observed. The prospect shaft/pit presents a moderate fall-in hazard, whereas the relatively shallow trenches are not a significant public safety hazard.

6.23.5.3 Waste Rock

An extensive amount of waste rock has been spread level on the mine and mill site. Most of the waste rock is on the east half where it has been placed up to the edge of the muskeg. A 3 m high windrow of waste rock has been pushed up against the forest edge. On the west side of the site, beside the Douglas Lake Road, and immediately to the north, is a 5 m high and steep stockpile at the margins of an outcrop. The slopes are stable. Elsewhere on site, the depth of the waste rock is variable, as it is either a thin cover on top of bedrock or infills topographic lows. It is difficult to estimate the total volume of waste rock; however, taking the dimensions of the clearings the volume but would be in the range of tens of thousand cubic metres. Overall, the waste rock does not appear to present a public safety hazard.

The waste rock is a distinctive brown colour due to pervasive carbonate (ankerite) alteration. Visible disseminated sulfides (2 to 4%) in the waste rock, suggests an acid generation potential.

6.23.5.4 Tailings

The tailings occupy a 1.5 hectare area, ranging in width from 50 m to 100 m wide and at least 200 m long. A broad ditch (3.6 m wide and up to 1.2 m deep) running the length of the tailings impoundment allows precipitation and melt water to drain northward into the retention pond. The tailings are a tan coloured fine sand with rusty orange coloured spots.

The drainage ditch may present a travel hazard to snowmobilers if obscured by snow. Otherwise, no other public safety hazards were observed.

6.23.5.5 Debris

Small pieces of demolition concrete have been mixed with the waste rock. At the northeast end, near the decline, there is a small amount of scrap lumber mixed with the waste rock, along with some metal, wire and refrigerator. Approximately 100 m of drill core has been discarded beside a trail at the south end of the site. Near the former ventilation house is a large sheet of scrap metal that appears to have been part of a drill-rig sled. The debris does not appear to present a public safety or environmental hazard.

No debris was observed at the tailings impoundment area.

6.23.5.6 Site Buildings

Several building foundation slabs remain on the site. The largest is the mill foundation which is 12 m long and 52 m wide. A floor slab, 6 m by 11 m, of unknown purpose was found at the east side of the site. At the former ventilation house, there is a 2.4 m square concrete slab. The condition of the remnant foundations are good, with no openings, and do not present a public or environmental hazard.

No buildings or ruins were observed at the tailings impoundment area.

6.23.6 History of Previous Inspections

The mine has had numerous inspections by Saskatchewan Environment when the facility was operational and during the decommissioning and reclamation phases.

6.23.7 Risk Assessment Ranking

Public Safety Assessment	11
Environmental Assessment	5
Combined Total Assessment	16
Ranking	12/26

The risk assessment ranking was only completed for the mill and mine area of the site. The tailings area has previously been investigated by Saskatchewan Environment.

The site is readily accessible by vehicle and it appears that local inhabitants access the site for pet walks and other uses, thereby increasing the potential exposure to hazards, which include open trenches and waste rock with poor footing. The waste rock stockpile covering the decline has large gaps between the broken rock, increasing the trip and fall hazard. The prospect shaft or pit also presents a fall and entrapment hazard. Therefore, 1.5 points were attributed to the “additional public safety risks” category. In addition, one point was attributed to the “additional environmental risks” category due to the abundance of sulphide mineralized waste rock.

6.23.8 Recommended Follow-up

Follow-up activities should be directed at removing fall hazards. Finer crushed rock can be placed on top the pile covering the decline entrance to close the rock gaps. The prospect shaft can be backfilled with waste rock. Debris, such as the refrigerator and scrap metal, can be removed for appropriate disposal.

Photograph 6.23-1. Vista (Bootleg) Mine-Aerial View-October 23, 2002

Photograph 6.23-2. Vista (Bootleg) Mine-Aerial View of Tailings Area-October 23, 2002

Photograph 6.23-3. Vista (Bootleg) Mine-Discarded Drill Core-October 25, 2002

Photograph 6.23-4. Vista (Bootleg) Mine-Panoramic View at East Site of Mill & MIne Area Looking West-October 25, 2002

Photograph 6.23-5. Vista (Bootleg) Mine-Concrete Foundation Slab-October 25, 2002

Photograph 6.23-6. Vista (Bootleg) Mine-Concrete Pad at Ventilation House-October 29, 2002

Photograph 6.23-7. Vista (Bootleg) Mine-Scrap Steel Plate-October 29, 2002

Photograph 6.23-8. Vista (Bootleg) Mine-Trench 'D'-October 29, 2002

Photograph 6.23-9. Vista (Bootleg) Mine-Waste Rock Covering Decline Entrance-October 29, 2002

6.24 Graham Mine

6.24.1 Location and Access

Site Inspection: 25 October 2002

Location: NTS Map Sheet 63 L/16
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 46' 35" lat 102° 11' 27" long (general site location)	6073313 m N 680679 m E (general site location)	Shaft 6073132 m N 680726 m E No. 3 Deposit 6073700 m N 680296 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 19 km west of the Town of Creighton near the south shores of two small unnamed lakes that are situated 2.5 km north of Amisk Lake. From the Community of Denare Beach, on Amisk Lake, the site is 15 km to the northwest. The site is accessible by a snowmobile trail with the trailhead at the north end of Amisk Lake. Access by float plane may be possible by landing on one of the small lakes.

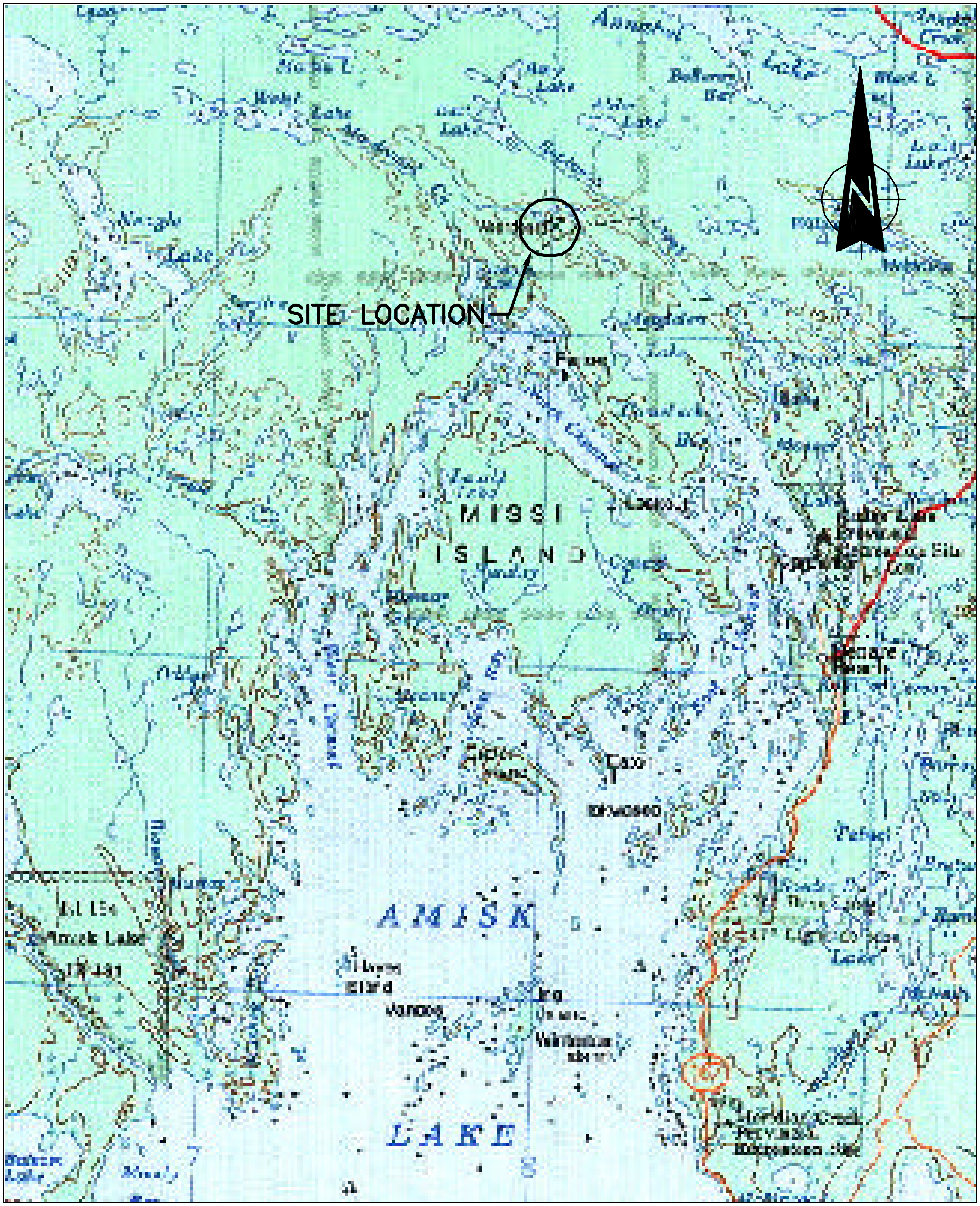
The site location is shown in Figure 6.24-1. A general plan showing the mine site and other nearby trenches is presented in Figure 6.24-2. Site plans for the No. 2 Deposit and the No. 3 Deposit workings are shown in Figures 6.24-3 and 6.24-4, respectively. Photograph Nos. 6.24-1 to 6.24-9 show the site.

6.24.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0296
Property: S-102861 (formerly: ROD claim 2; CHICAGOFF claim)
Location: Amisk Lake – north of northeast end
Owner(s): Jim Campbell (50%) – Estate of Rod McKenzie (50%)
Commodity: Au **Associated Commodities:** An
Deposit Type: Outcrop

6.24.3 Geology

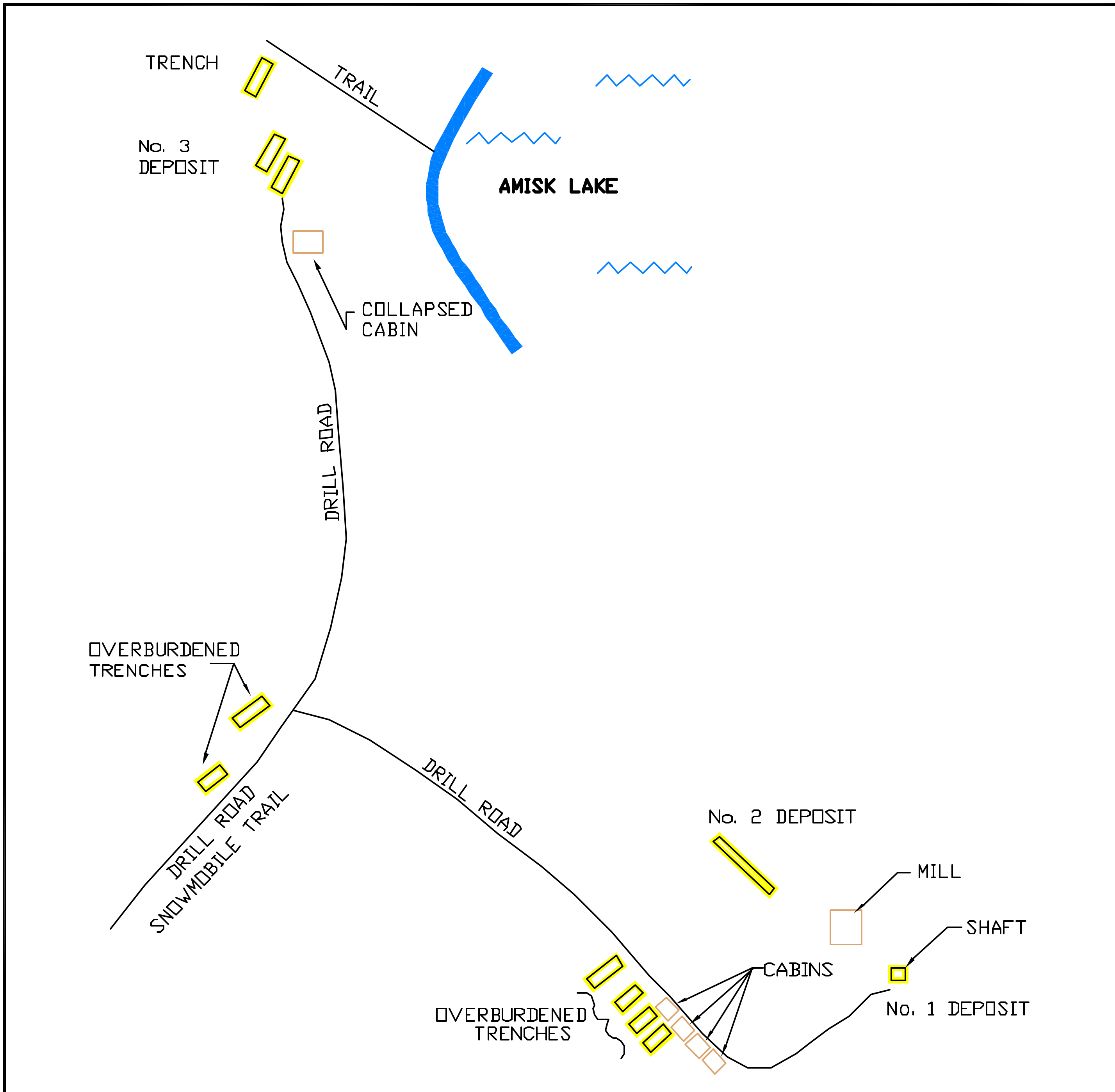
The mesothermal gold showing consists of two occurrences of mineralization. The bedrock consists of Missi Series conglomerate, greywacke and arkose on a large drag fold on the



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
GRAHAM MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.24–1



LEGEND:

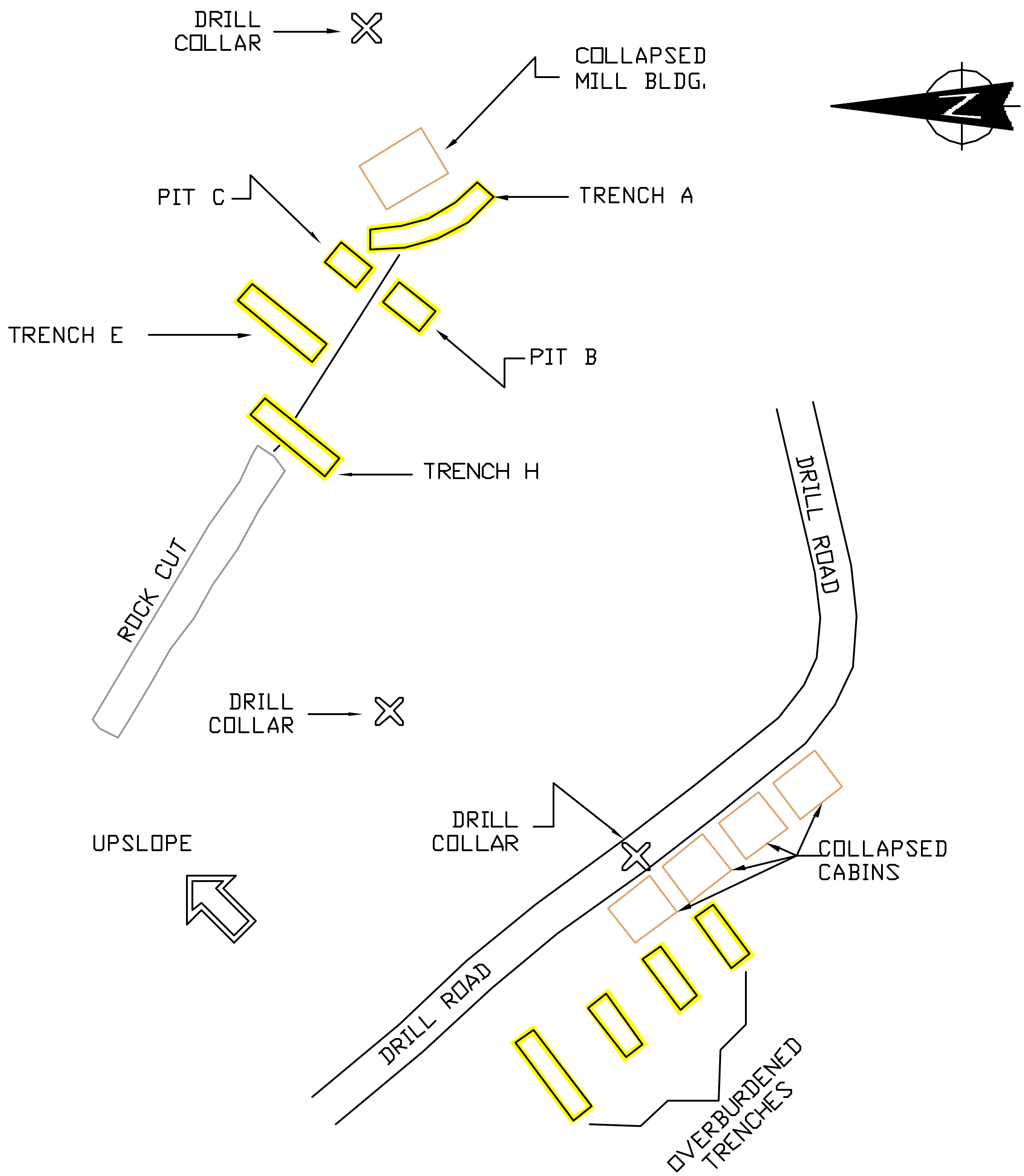
Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

GRAHAM MINE – GENERAL SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.24–2



LEGEND:

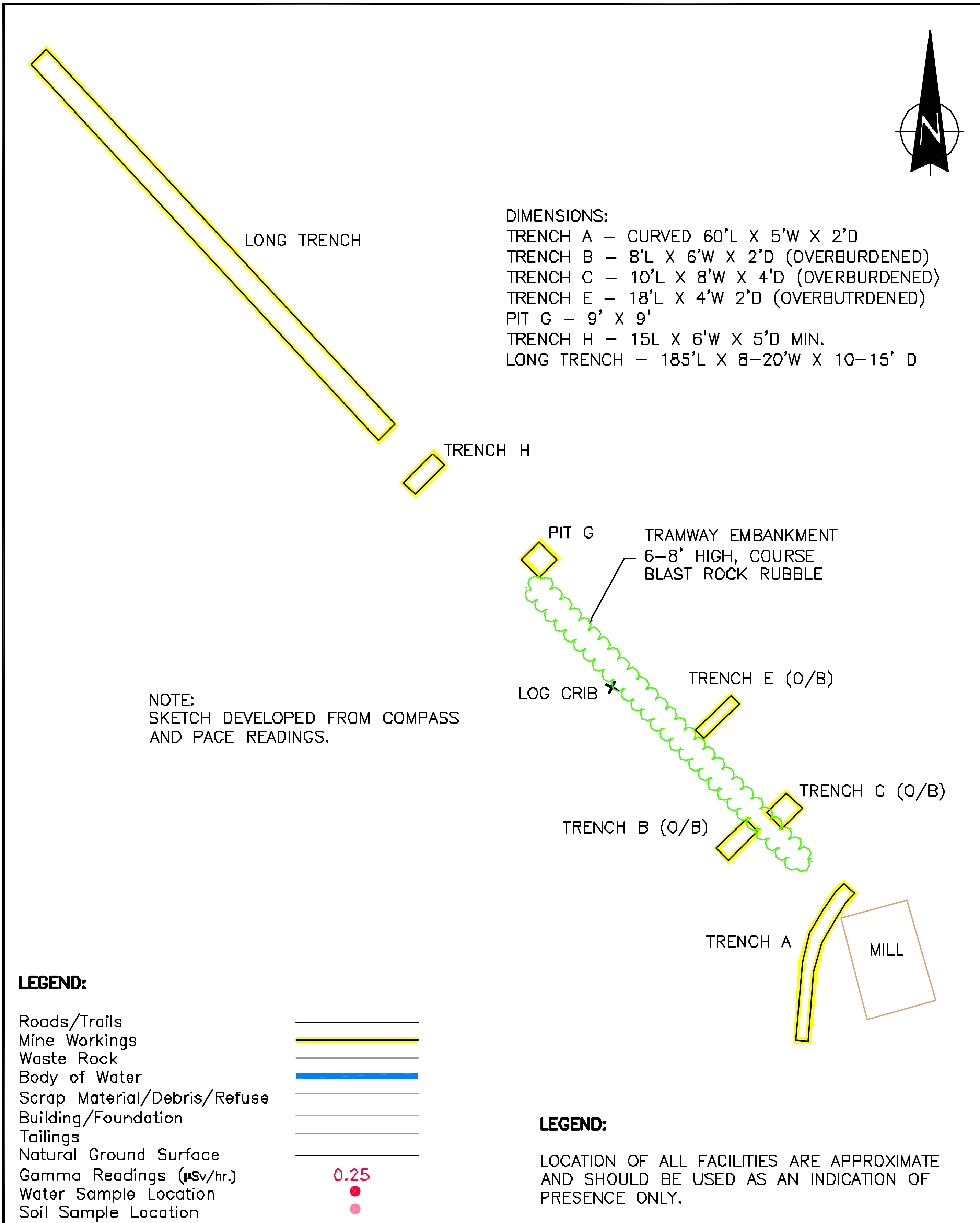
Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

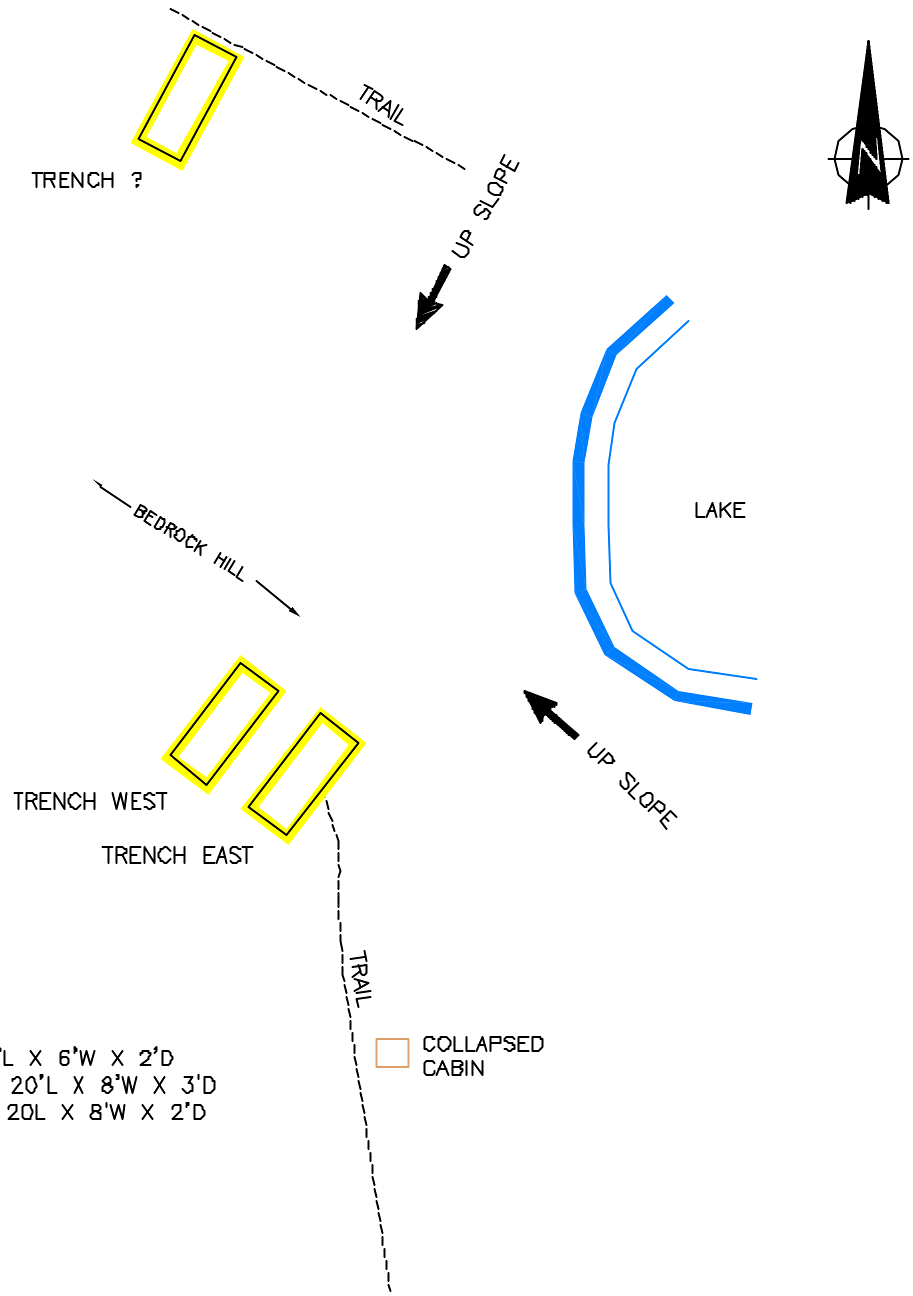
GRAHAM MINE – SITE PLAN OF No. 1 DEPOSIT
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.24–3



GRAHAM MINE – SITE PLAN OF No. 2 DEPOSIT
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.24–4



DIMENSIONS:

TRENCH ? – 25'L X 6'W X 2'D
TRENCH WEST – 20'L X 8'W X 3'D
TRENCH EAST – 20L X 8'W X 2'D

LEGEND:

- Roads/Trails
- Mine Workings
- Waste Rock
- Body of Water
- Scrap Material/Debris/Refuse
- Building/Foundation
- Tailings
- Natural Ground Surface
- Gamma Readings (µSv/hr.) 0.25
- Water Sample Location
- Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

GRAHAM MINE – SITE PLAN OF No. 3 DEPOSIT
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.24–5**

northeast limb of the Magdalen Lake syncline. Shearing is common, and locally, very strong. Both occurrences are typical quartz-ankerite and aplitic vein stockworks hosted by chlorite, sericite and carbonate altered conglomerates. Both showings exhibit weak biotite alteration.

The Graham No. 1 Occurrence, as exposed by trenches, a shaft and drilling, was initially described as a 61.0 to 76.2 cm (24 to 30 inch) wide, by 29.0 m (95 ft) long quartz-ankerite veinlet that hosts up to 5% fine grained cubic pyrite, and in some places chalcopyrite. Six initial channel samples indicated a gold content of 0.62 oz/ton over a 83.8 cm (33 inch) width and a 29.0 m (95 ft) length. Sampling from a 10.7 m (35 ft) deep shaft located 40 ft from the northwest end of the vein gave an average gold content of 0.38 oz./ton over a 132.1 cm (52 inch) width. The 2 to 3 m (6.6 to 9.8 ft) wide zone, which is overburden covered at both ends, was grab and channel sampled. A sample taken near the shaft returned 0.325 oz/ton Au over 2 m. The south end of the zone averaged 0.112 oz/ton Au over 2 m and the north end of the zone averaged 0.186 oz/ton Au.

Work by SMDC in 1987 led them to conclude that the showing consists of two main mineralized zones (1a and 1b) that are hosted by a series of interbedded conglomerates and arkose/feldspathic wackes. The mineralized zones cross-cut bedding and are subparallel to parallel, to the axial trace of the F-2 fold event. Individual quartz veins exhibit steeply southwest plunging small scale D-2 folds.

Zone 1A occurs both as an anastomosing network of centimeter scale quartz-ankerite veins and as a large vein up to 1 m (3.3 ft) wide. The zone, which can be traced along strike for 90 m (295 ft), pinches and swells from 1 to 4 m (3.3 to 13 ft) in width. Up to 5% pyrite and traces of visible gold are associated with the veining. 1987 channel sampling returned up to 0.136 oz/ton Au over 1.0 m.

Zone 1B is an up to 5 m (16.4 ft) wide anamostosing network of narrow quartz-ankerite-feldspar veins that carry up to 5% pyrite and traces of visible gold. Channel samples returned up to 1.37 and 1.17 oz/ton Au over 0.5 m and mineable sections of 0.332 and 0.363 oz/ton Au over 1.5 and 3.8 m.

The Graham No. 2 Occurrence, which is located 122 m (400 ft) northwest of the No. 1 Occurrence, was exposed in a single trench. The zone was initially described as consisting of a series of white quartz veins hosted within highly schistose conglomerate. Surface sampling returned assays of 0.33 oz/ton Au over a width of 4.3 m (14 ft) Channel sampling returned 0.21 oz/ton Au over 6 ft. Later sampling of the 120 to 140° trending, 0.1 to 1.0 m (0.3 to 3.3 ft) wide veins returned 0.219 oz/ton over 1 m. Channel sampling of the northernmost small trench returned a maximum of 0.571 oz/ton Au over 1 m from an aplitic veinlet and sampling of a small trench returned a maximum of 0.542 oz/ton Au and an average of 0.353 oz/ton Au. Channel samples taken in 1987 returned up to 0.170 oz/ton Au over 0.5 m. Drilling results can be obtained from the Saskatchewan Mineral Deposit Index (SMDI).

Based on the results of the 1987 to 1988 drill program, Cameco split the Graham No. 1 Zone into the 1A, 1B, and 1C zones and the Graham No. 2 Zone into the 2A and 2B zones. Cameco concluded that, although it was possible to trace individual mineralized zones from hole to hole, the individual zones could not be traced over significant strike lengths.

The 1A Zone has been traced over a strike length of 70 m (230 ft), across a 2 to 7 m (6.6 to 23.0 ft) width, and down plunge to a vertical depth of 120 m (394 ft). The zone appears to be closed by a S-shaped fold which plunges steeply grid east. The zone consists of up to 5% pyrite and local visible gold in quartz–ankerite ± feldspar ± chlorite stringers hosted in arkose and to a lesser extent in conglomerate and chlorite-carbonate schist. To date, surface channel samples returned <0.15 oz/ton Au over a minimum mineable width of 1.5 m. Surface samples reached 0.415 oz/ton Au over 1.0 m true width. The zone is open to the east and down plunge.

Zone 1B, which has been traced over a strike length of 50 m (164.0 ft), across a width of 2 to 7 m (6.6 to 23.0 ft), and down plunge vertically to 160 m (525 ft), closes in a grid west direction due to a steeply grid east-plunging fold. The steeply dipping zone consists of up to 10% disseminated/and or stringer pyrite and local visible gold within quartz - ankerite ± feldspar ± chlorite veins in a silicified and carbonatized arkose and locally in conglomerate. To date, surface channel samples returned less than 0.15 oz/ton Au over a minimum mineable width of 1.2 m. Surface samples returned up to 0.363 oz/ton Au over 3.8 m true width. Zone 1C, which has been traced over a strike length 50 m (164 ft), across a width of 3 to 7 m (10 ft to 23.0 ft), and down plunge vertically to 150 m (490 ft), is not exposed at surface. The zone consists of 1 to 5% pyrite within quartz ± carbonate ± feldspar ± chlorite stringers in silicified arkose and conglomerate. Drill hole BT7-2 returned 0.344 oz/ton Au over 1.3 m.

Zone 2A, which has been traced over a strike length of 130 m (427 ft) and down dip for 110 m (361 ft), consists of up to 12% disseminated and stringer pyrite and local visible gold hosted in quartz ± carbonate ± feldspar ± chlorite stringers in arkose, conglomerate, and locally in chlorite-carbonate schist. The ore-grade pod was channel sampled and up to 0.571 oz/ton Au over 1.0 m true width was returned. The pod may bend near grid co-ordinate 70+25W.

Zone 2B, which has been traced over a strike length of 110 m (361 ft) and down dip to 65 m (213 ft), consists of up to 3% disseminated pyrite in quartz ± carbonate ± feldspar ± chlorite veins in silicified arkose and conglomerate. No ore grade intersections over mineable widths have been returned. The best surface sampling returned 0.219 oz./ton Au over 1.0 m true width. The zone is open along strike and down dip.

The Frank Showing, which is located 70 m (230 ft) grid south of the Graham No. 2 Zone trenches at grid co-ordinates 71+20W and 13+85S, consists of a west-northwest-trending, up to 8 m wide zone of stringer quartz-ankerite ± feldspar ± chlorite ± biotite veining hosted in a silicified conglomerate. The individual narrow (<1 cm to 1.0 m wide) veins are discontinuous, irregular, and are locally small-scale folded. The zone hosts up to 7% disseminated and stringer pyrite mineralization. Surface channel sampling of the zone returned up to 0.079 oz/ton Au over 0.5 m. The showing is open to the east and down plunge. Drill-testing results of the Frank Showing can be obtained from the Saskatchewan Mineral Deposit Index.

6.24.4 Exploration History

The Graham property consists of 6 claims (VALLEY, SUPRISE, IRONSIDE, GOLDENGATE, MOTHERLODE, and CHICHAGOFF) situated 1.5 miles (2.4 km) north of the northeast end of Amisk Lake. Occurrences 1 and 2 are on the CHICHAGOFF claim.

Trenching, drilling, and one 10 m (32 ft) shaft were completed on Graham deposit no. 1 between 1914 and 1932. It is reported that some gold was produced by a 10 ton per day mill installed on the property by W. Bowie, but no production figures are recorded.

A diamond drill program was rumored to have been completed on the property in 1932. One drill location was found near the Graham No. 2 Zone. By 1973, the showing was within ROD claim No. 2. Between 1973 and 1975, R. McKenzie and J. Stewart completed 1 trench on the claim.

On 1 August 1982, the Graham No. 1 and No. 2 zones were staked as S-102861 by Jim Campbell and Rod McKenzie.

By 1983, SMDC had surrounded the ROD claims by CBS 8847. In this year, SMDC completed detailed geologic mapping and soil sampling of grid 4-83 located on CBS 8867 to the east of the showing. Two soil samples returned 430 and 480 ppb Au. In 1984, SMDC completed four drill holes on this grid. Drill hole WV4-2 discovered the mineralization described as SMDI 2227. In 1986, SMDC completed forest litter and treebark biogeochemical surveys over the showings. SMDC also completed reconnaissance geologic mapping and prospecting, lithogeochemical and soil sampling and trench channel sampling. The results are given above. A grab sample taken at the Graham No. 2 showing assayed 0.309 oz/ton Au and a grab sample taken from a quartz vein located 535 m west of the No. 2 showing assayed at 0.032 oz/ton Au. Between 1986 and 1987, Cameco completed ground VLF-EM, magnetic/gradiometer and IP/resistivity surveys over the showing.

In 1987, Cameco completed a wacker overburden and soil survey over the two showings and drill holes BT7-02 to 07 were completed to test the zones at a 20 m depth along strike. The better intersections are reported above. The Graham No. 1 and No. 2 veins were stripped, mapped in detail mapped and grab and channel sampled. Detail lithogeochemical sampling and prospecting located the Frank Showing approximately 70 m (230 ft) grid south of the Graham No. 2 vein. This showing is described above. In 1988, a Cameco (50%)-Vista Mines (50%) partnership completed overburden stripping, mapping and channel sampling on the Graham No. 1 and No. 2 veins. In the winter of the same year, drill holes BT8-9 to 13 and 16 to 21 were completed to test the Graham 1 and 2 Zones and drill holes BT8-14 and 15 were completed on the Franks Showing. The partnership completed VLF-EM surveys over the Graham and Franks Showings and IP/resistivity surveys over the Graham Showings.

6.24.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.24.5.1 General

The Graham Mine site was inspected on 25 October 2002. Access to the site was achieved by boat from Denare Beach, landing at the trailhead at the north end of Amisk Lake, followed by a 3 km long walk on a snowmobile trail to the site. Snow, up to 7 cm thick, covered the ground surface. Light snow was falling during part of the inspection.

The site workings are located on the slopes, near the top, of moderately sloped hills. There are three separate areas of workings, consisting of rock and overburden trenches, along with drill pads. Additional newer overburden trenches were found during the site visit. There are six collapsed buildings. Several old drill roads cross the site. The snowmobile trail from Amisk Lake passes through the site area.

Forest vegetation is predominately conifer, with some poplar and birch, and is sparse at the top of the bedrock hills. Extensive stripping by removing trees and overburden, to expose the bedrock, appears to have been done in the area of the No.1 Deposit and No.3 Deposit workings. Trees have been bulldozed into piles at the edges of the cleared bedrock.

There was no evidence of recent visitation to the site. However, windfall trees blocking the trail have been recently cut to allow passage of snowmobiles. The trail is said to be used by residents from Denare Beach.

6.24.5.2 Mine Workings

The No. 1, 2 and 3 Deposits (as described in the SMDI inventory) were located. The "Frank Showing" (as described in the SMDI) appears to coincide with the overburden trenches found in the Cabin Area. For purposes of this investigation, the various trenches were assigned number or letter identifiers in order to distinguish them from each other. Figures 6.24-3 and 6.24-4 provide the measured dimensions of each trench.

Mine workings at the No. 1 Deposit consist of a single open shaft, 1.8 m by 2.1 m at the surface, exposing a 46 cm wide quartz vein hosted in a metaconglomerate. Water has flooded the shaft to a depth of 1.1 m below the ground surface. No water discharge from the shaft was observed. Shaft walls are solid and stable. There appears to be a trail or old drill road that passes beside the visible shaft opening. The flooded shaft presents a significant fall-in hazard to people and large wildlife.

A water sample of the shaft water was collected using a container fastened to a dipping stick. The collected water was then transferred to the appropriate sample containers. Analytical results are provided in Table 6.24-1.

Field measurements of physical parameters were made of the water collected in the dip-container. The water had a pale yellow hue. Field measurements were as follows:

Date:	25 October 2002
Time:	12 noon
pH	8.27
Conductivity:	75 µS/cm
Temperature:	+ 4.5°C

The shaft water is generally of good quality with all parameters below applicable Saskatchewan Surface Water Quality Measurements for the Protection of Wildlife with the exception of iron (3.5 mg/L).

Mine workings at the No. 2 Deposit consist of a series of small overburden and rock trenches on either side and along of what appears to be a tramway embankment that leads to a massive rock cut. The small trenches range in length (2.4 m to 5.5 m) and width (1.2 m to 2.4 m) and are shallow (0.6 m to 1.2 m). Some of the trenches appear newer and seem to have been only excavated into the overburden, whereas the rock trenches look older. The sloped trench walls are stable, scrub vegetation has ingrown the excavations, and a minor amount of precipitation water has pooled and froze in the bottom of the trenches.

The 45 m long "tramway" embankment connects the rock cut long trench to the mill. Coarse (30 cm to 60 m size) broken waste rock has been used to build the embankment to a height of 2.4 m. Protruding from the embankment are a couple of log trestles that could have been used to support rail track.

The rock cut is a 56 m long trench, which is the original No. 2 Deposit working. The trench is 2.4 to 6 m wide with vertical rock walls 3 m to 4.6 m high. A pit-like feature is situated at the southend of the trench and was flooded. The trench walls appear stable, but boulder-sized pieces of loose rock have fallen into the trench. Mature trees and scrub brush grow along the trenches edges. The approach to the trench opening is sudden, especially at its highest and narrowest point.

The rock cut trench is a fall-in hazard because it is only noticeable from a close distance. The other trenches and pits are not a significant public safety hazard.

Several drill collars, with protruding casings, were found within the general area of the No. 2 Deposit workings.

Mine workings at the No. 3 Deposit consist of two shallow trenches in an area of stripped bedrock, exposing quartz veining. The trenches were difficult to discern but appear to be 6 m long, 2.4 m wide and up to 1m deep. Trench-West extends into a flooded depression ingrown with bulrushes. Extensive quartz veining was exposed in Trench-West. The slopes walls of the trenches are shallow and stable, and do not pose a public safety hazard. North of No. 3 Deposit, beside a portage / snowmobile trail, was what appears to be a shallow, newer-looking, rock trench.

Table 6.24-1
Graham Mine-Shaft Water Quality

Parameter	Units	Result	SSWQO [(1)]
Total Trace Metals			
Aluminum (Al)	mg/L	0.019	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	<0.5	0.05
Boron (B)	mg/L	0.004	
Barium (Ba)	mg/L	0.008	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	<0.001	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.001	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) [(4)]	mg/L	<0.001	0.025
Phosphorous (P)	mg/L	0.01	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	<0.002	
Strontium (Sr)	mg/L	0.028	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.007	0.05
Total Major Metals			
Calcium (Ca)	mg/L	8.5	
Potassium (K)	mg/L	0.7	
Magnesium (Mg)	mg/L	3.3	
Sodium (Na)	mg/L	<0.5	
Iron (Fe)	mg/L	3.5	1
Manganese (Mn)	mg/L	0.29	
Silicon (Si)	mg/L	0.87	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	6.58	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 [(2)]
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 [(3)]

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The specific Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The specific Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Mine workings at the Frank Showing / Cabin Area consist of four trenches excavated into the overburden along the southwest margin of the hill. Trench No. 1 is 21 m long whereas the other three trenches are each 4.6 m long. All the trenches are 1.5 m deep, moderately sloped with the excavated earth piled on either side of the excavation. Scrub vegetation has ingrown Trenches No. 2, No. 3 and No. 4. The trenches are within 5 m off the old drill road and present a moderate safety hazard to snowmobile travel. A drill collar, with protruding casing, is located on the drill road.

Adjacent to the snowmobile trail, just southwest of the original site workings, two newer overburden trenches were found. The shallow trenches are 9 m and 21 m long, 0.7 m deep, and were flooded and frozen. These do not appear to pose a public safety hazard.

6.24.5.3 Waste Rock

Waste rock or earth is piled along edges of the smaller rock and overburden trenches. The volume of waste rock is commensurate with the size of the excavations. At the No. 2 Deposit's long trench, the amount of waste rock piled along the trench edge appears to be less than the excavation volume. A minimal amount of waste rock was visible adjacent to the shaft. The volume of broken rock comprising the tramway embankment is estimated to be 150 m^3.

The low sloped waste rock piles, and steeper tramway embankment, do not appear to present a public safety or environmental hazard.

6.24.5.4 Tailings

The presence of tailings could not be determined due to snow cover obscuring the ground surface. However, the possibility of tailings being disposed onsite is high since a 9 tonnes mill was located onsite and through which 50,000 tonnes may have been processed. The tailings may have been disposed on the hill slope immediately east of the mill.

Although there is no record of tailings on site, following work should focus on determining whether or not tailings are present.

6.24.5.5 Debris

Visible debris included a wood box and a few rusty food cans at the mill, a piece of machinery beside Trench 'B' at the No. 2 Deposit workings, and a household-type furnace oil tank. The tank was located at one of the drill collars, and was empty and had an opening cut into it. It appears the tank may have been used for water storage for the drill. The debris does not appear to present a public safety or environmental hazard.

6.24.5.6 Site Buildings

The mill is a wooden structure and has collapsed leaving unstable portions jumbled together. There are numerous openings into the collapsed structure. Inside are three concrete pedestals (1 m base and 2.1 m high) that may have been interior supports for the building or machinery. Sheets and pieces of corrugated steel roofing/siding lay around the mill. The mill occupies an 8 m wide by 18 m long area. The mill building presents a collapse hazard.

Four collapsed log cabins are situated at the Frank Showing/Cabin Area, as well as a log hut or outhouse. The log walls are less than 1.2 m high, and although they can be knocked down relatively easily, they do not pose a public safety hazard.

Near the No.3 Deposit, beside the access trail, is a collapsed log cabin. The walls are about 1.2 m high, and do not pose a public safety hazard.

6.24.6 History of Previous Inspections

The Graham Mine has been inspected in the past by Saskatchewan Environment and Saskatchewan Industry and Resources.

6.24.7 Risk Assessment Ranking

Public Safety Assessment	15.5
Environmental Assessment	6
Combined Total Assessment	21.5
Ranking	4/26

The site is located near a snowmobile trail used by local inhabitants, and thus increases the chances that recreational vehicles could accidentally fall into the open shaft, the deep trench, some of the shallow trenches or hit drill casings, should these hazards be obscured. The collapsed mill building is in precarious condition and dangerous to enter. Therefore, three points were attributed to the “additional public safety risks” category.

Given that tailings of unknown volume may be present onsite, one point was attributed to the “additional environmental risks” category. The geology of the site suggests that the acid generating potential is low. Furthermore, tailings disposed may have been in the vicinity of the mill which is away from a surface water course

6.24.7 Recommended Follow-up

The primary follow-up work should be directed at removing public safety hazards since the site is accessible by snowmobile. Snow can obscure some of the workings, and there are entry and fall dangers. The shaft should be sealed, either by in-filling with waste rock (possibly from the tramway embankment) or placement of a concrete cap. The long trench at the No.2 Deposit should either be backfilled or the high vertical walls could be blasted down to reduce any serious fall hazard. The mill should be knocked down completely, allowing the timber and logs to rot away. Metal debris and relict machinery should be removed for proper disposal. Overburden trenches close to the snowmobile trail could be backfilled with the adjacent excavated earth, to remove any travel hazard to snowmobilers. As well, any protruding drill casings on trails should be removed. Hazard warning placards should be posted should reclamation activity be delayed.

Further inspection to determine the location and extent of tailings on the site, if any, and whether it could pose an environmental hazard could be considered.

Photograph 6.24-1. Graham Mine-Aerial View of Shaft, Mill and No. 2 Deposit-October 23, 2002.

Photograph 6.24-2. Graham Mine-Aerial View of Cabin Area-October 23, 2002.

Photograph 6.24-3. Graham Mine-Aerial View of No. 2 Deposit Workings-October 23, 2002.

Photograph 6.24-4. Graham Mine-Shaft at No. 1 Deposit-October 25, 2002.

Photograph 6.24-5. Graham Mine-Panoramic View of No. 1 Deposit Area, Looking Northwest-October 25, 2002.

Photograph 6.24-6. Graham Mine-Collapsed Mill Building-October 25, 2002.

Photograph 6.24-7. Graham Mine-Discarded Machiner at No. 2 Deposit-October 25, 2002.

Photograph 6.24-8. Graham Mine-Collapsed Log Cabins-October 25, 2002.

Photograph 6.24-9. Graham Mine-Overburden Trench (21 m Long) at 6073320 m N and 680286 m E-October 25, 2002.

6.25 Namew Lake Mine – Water Sample

6.25.1 Location and Access

Site Inspection: 26 October 2002

Location: NTS Map Sheet 63K
UTM Zone: 14

NAD 83		NAD 27
Geographic**	UTM**	UTM*
not available	not available	36009902 m N 316624 m E

* Location recorded by GPS during Year 3 field program

The site is located at the southeast end of Namew Lake, which is located 60 km south of Flin Flon. Vehicle access to Namew Lake is via a 25 km gravel road from Manitoba Provincial Highway 10 to the community of Sturgeon Landing located at the north end of the lake on the Saskatchewan side. Site access is achieved by boat from Sturgeon Landing, travelling 7 km across Namew Lake to the site area.

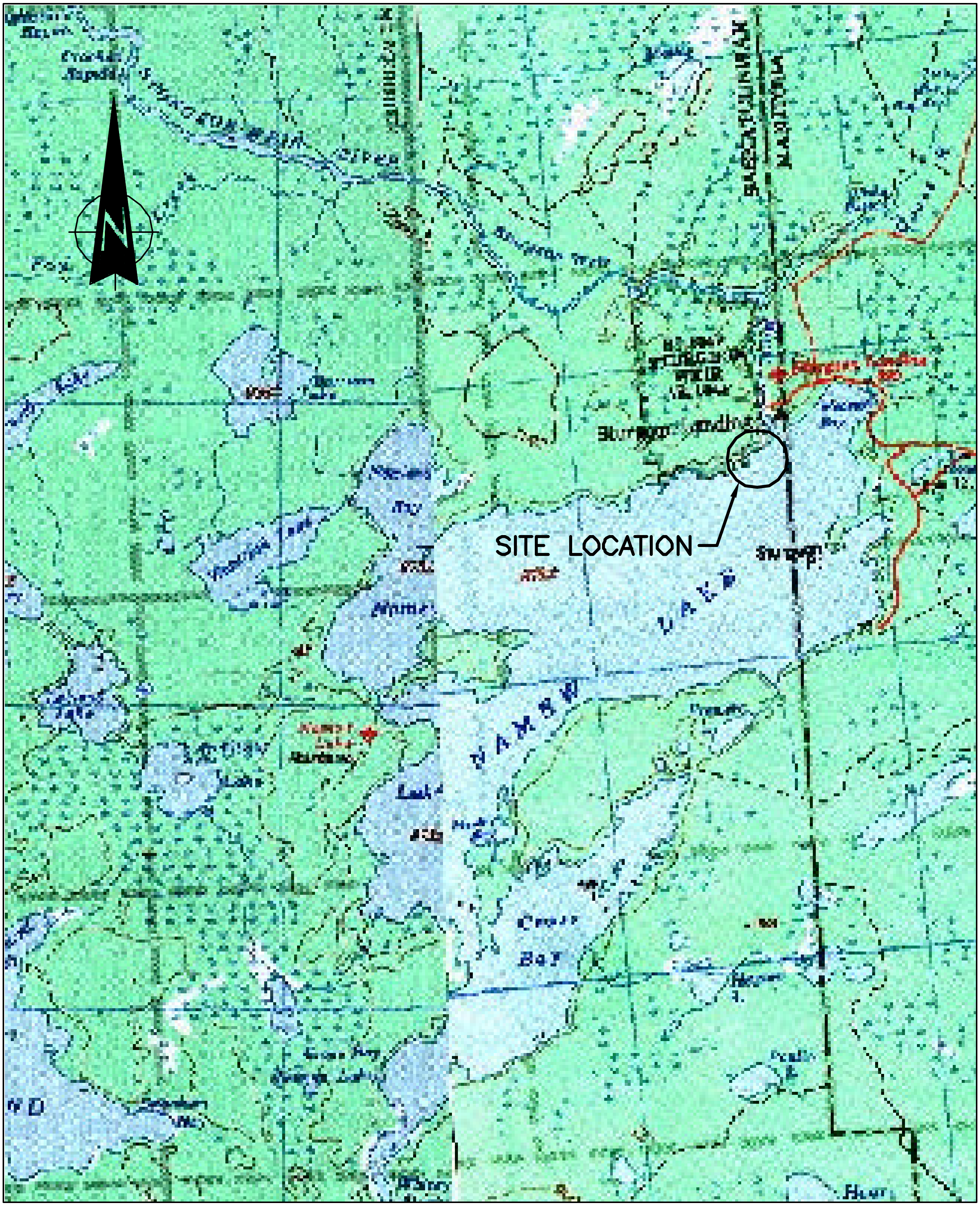
The site is a water sample collection point (GPS location above), about 25 m from the shoreline of Namew Lake. The provincial boundary is distinguished by a major north-south cut line visible from the lake.

The Hudson Bay Mining & Smelting (HBMS) Namew Lake Mine is located on the shore of the lake, 2 km east of the sample collection point. The mine is located within Manitoba. A private road, branching off the Sturgeon Landing road, leads to the mine.

Location of the site and the HBMS Namew Lake Mine are shown in Figure 6.25-1. Photograph Nos. 6.25-1 to 6.25-3 show the site.

6.25.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: not applicable
Property: Namew Lake Mine
Location: Namew Lake – south shore
Owner(s): Hudson Bay Mining and Smelting
Commodity: Ni **Associated Commodities:** Cu; PGE
Deposit Type: Underground



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
NAMEW LAKE MINE – WATER SAMPLE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.25–1

6.25.3 Geology

At the Namew Lake mine, the mineralization occurs as solid sulphide lens, breccia and disseminated sulfides in Precambrian basement ultramafic rocks overlain by 40 m flat-lying Ordovician dolostone and sandstone and 6 m water. The deposit exists in a pipelike ultramafic sill.

6.25.4 Exploration History

The Namew Lake nickel-copper mine was in operation from 1989 until its closure in 1993. At the time of closure, approximately 2.25 million tonnes grading 0.63 percent Cu and 1.79 percent Ni had been mined. Underground equipment was salvaged, the mine allowed to flood, surface buildings were decommissioned and removed, and surface areas rehabilitated. Decommissioning was completed in January 1994. Hudson Bay Mining & Smelting is the current owner of the mine.

6.25.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.25.5.1 General

The mine site was located in Manitoba. However, tailings and waste rock may have affected Namew Lake in Saskatchewan. Therefore, a water sample from Namew Lake was collected.

The water sample was collected on 26 October 2002. In addition, the shoreline from Namew Lake Mine to the collection point was inspected, by boat, for any unusual conditions such as drainage from the mine site, waste rock or tailings. None was observed.

At Namew Lake Mine (as observed from the lake), several large buildings remain in the area of the headframe, repair shop, crusher and concentrator complex

A 6 m high bluff of flat-lying limestone is exposed along the length of the shoreline west of the mine. Large angular slabs of the limestone have fallen down from the bluff.

6.25.5.2 Water Sampling

While in the boat, a water sample was collected directly from the lake. The sampling point was 128 m west of the provincial boundary, on the Saskatchewan side of the lake, and about 25 m north of the shore.

Analytical results are provided in Table 6.25-1. The collected water was clear. The shallow lake bottom has a pale green colour with a yellowish tint.

Field measurements of physical parameters for the water sample were as follows:

Date:	26 October 2002
Time:	12:45 p.m.
pH	8.95 (fluctuating due to wave action on lake)
Conductivity:	176 µS/cm
Temperature:	+ 2.4°C

The water quality is generally good. The only parameter exceeding Saskatchewan Surface Water Quality Objectives for the Protection of Aquatic Life and Wildlife was copper (0.051 mg/L).

6.25.6 History of Previous Inspections

The site has had several previous inspections by Saskatchewan Environment during both the operational and decommissioning phases.

6.25.7 Risk Assessment Ranking

No risk assessment ranking was determined since the site was only a water sample collection point.

6.25.8 Recommended Follow-up

No follow-up activity is required.

insert Table 6.25-1

Table 6.25-1
Namew Lake Site-Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.022	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	<0.5	0.05
Boron (B)	mg/L	0.011	
Barium (Ba)	mg/L	0.017	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	<0.001	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.051	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	<0.001	0.025
Phosphorous (P)	mg/L	0.010	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.004	
Strontium (Sr)	mg/L	0.092	
Titanium (Ti)	mg/L	0.002	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	<0.005	0.05
Total Major Metals			
Calcium (Ca)	mg/L	20.0	
Potassium (K)	mg/L	1.70	
Magnesium (Mg)	mg/L	8.30	
Sodium (Na)	mg/L	4.70	
Iron (Fe)	mg/L	0.051	1
Manganese (Mn)	mg/L	0.002	
Silicon (Si)	mg/L	0.660	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	8.01	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Photograph 6.25-1. Namew Lake-Shoreline on Manitoba Side-October 26, 2002

Photograph 6.25-2. Namew Lake-Saskatchewan/Manitoba Provincial Boundary Cut-Line-October 26, 2002

Photograph 6.25-3. Namew Lake-Collecting Water Sample-October 26, 2002

6.26 Phantom Lake Mine

6.26.1 Location and Access

Site Inspection: 27 October 2002

Location: NTS Map Sheet 63 K/12
UTM Zone: 14

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^{o} 40’ 57” lat 101^{o} 52’ 53” long	6063058 m N 701039 m E	6063201 m N 314145 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 8 km south of the Town of Creighton near the south end of Phantom Lake, about 150 m in from the shore and at the top of a hill. The site is accessible by: (1) boat, from the boat ramp at Phantom Beach outside of Flin Flon, and a short walk, (2) a 2 km walk from the Mystic Lake Road; or, (3) in the winter by marked snowmobile trails. The Mystic Lake Road begins from Highway 167 in Flin Flon, and is used by HBMS as an ore-truck haul-road. A marked snowmobile trail connects Phantom Lake to Boot Lake.

The site location is shown in Figure 6.26-1. The site plan is shown in Figure 6.26-2. Photograph Nos. 6.26-1 to 6.26-4 show some of the workings at the site.

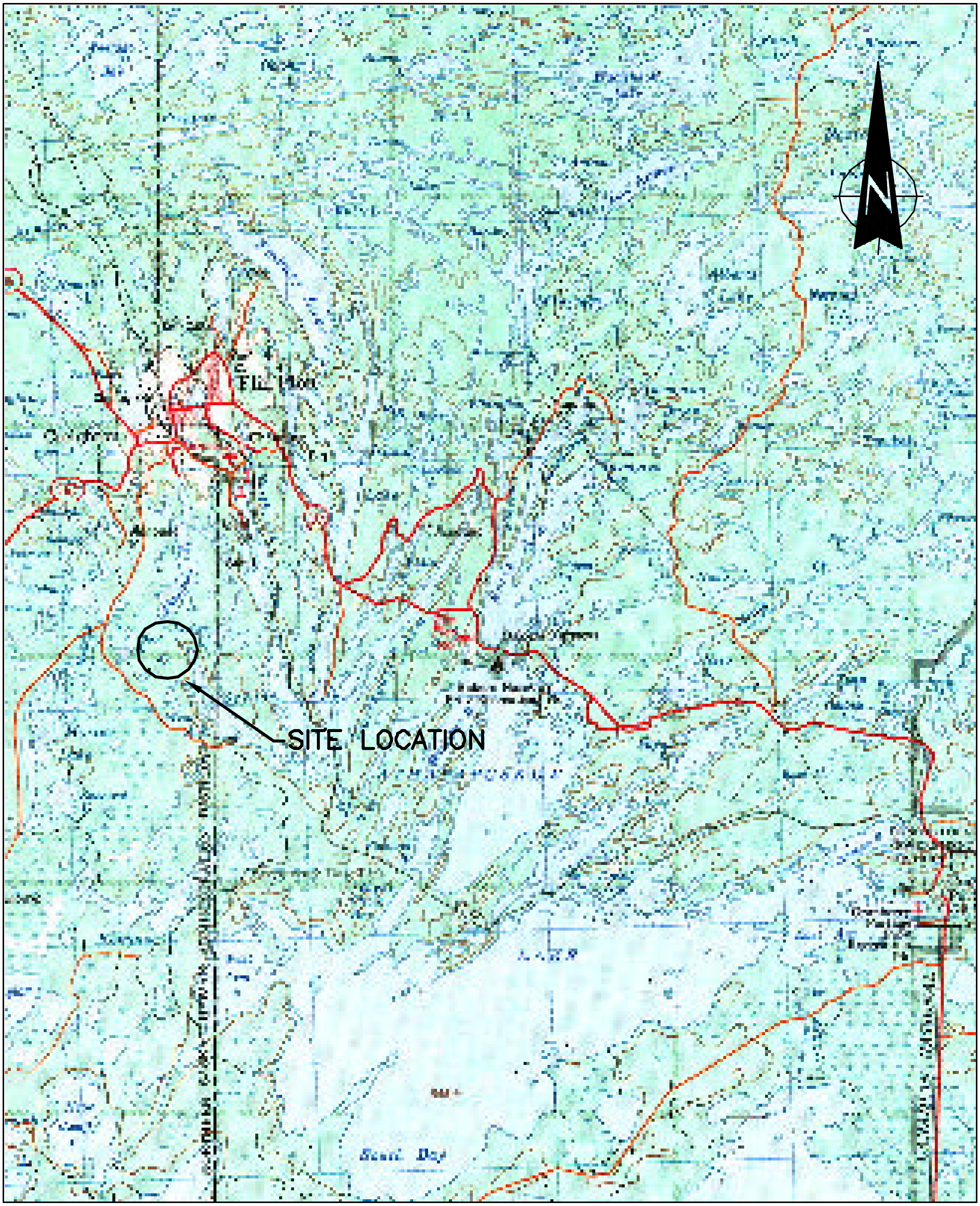
6.26.2 Property Information and Ownership

Property: Phantom Lake Au Mine
Saskatchewan Mineral Deposit Index Number: 0009
Location: Phantom Lake – south of
Owner(s): SMDC
Commodity: Au **Associated Commodities:** Ag; W; Cu
Deposit Type: Outcrop

6.26.3 Geology

This mesothermal gold deposit is located about 274 m (900 ft) south of Phantom Lake.

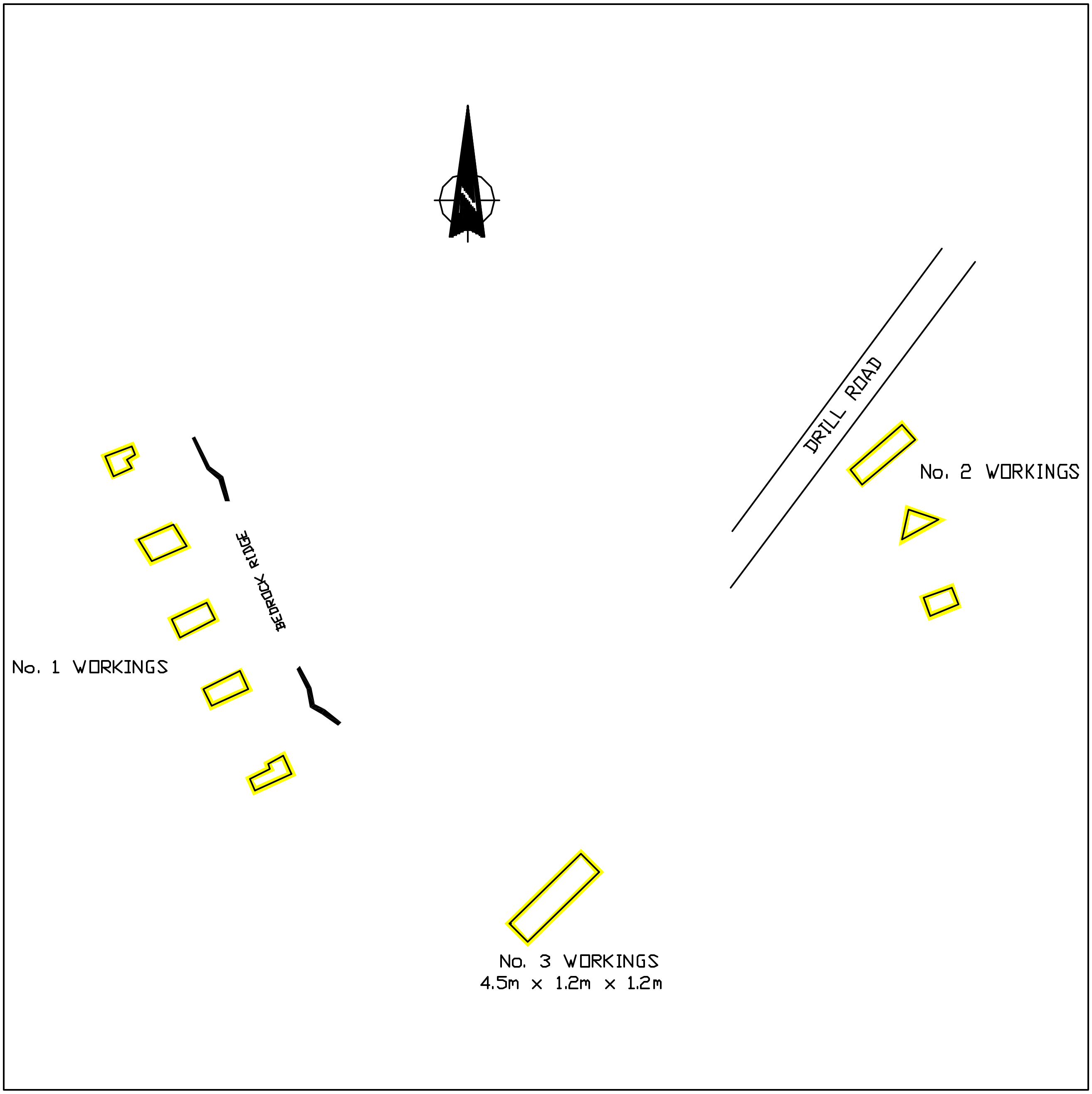
The area of the showing is underlain by granodiorite which intrudes metadiorite and basic volcanics of the Amisk Group and is itself intruded by the Phantom Lake Granite. The



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
PHANTOM LAKE MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.26–1



LEGEND:

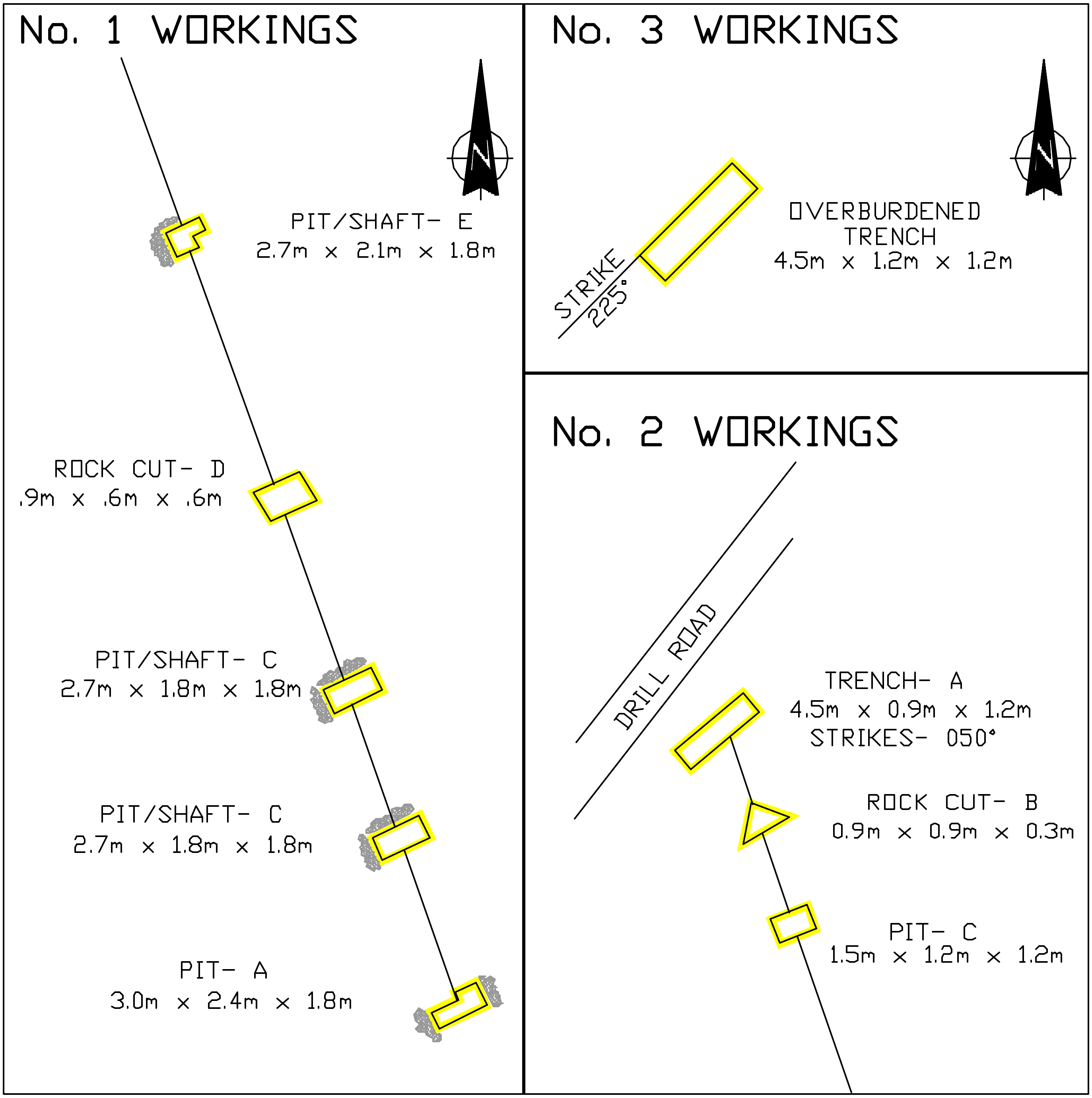
Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

PHANTOM LAKE MINE – GENERAL SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.26–2



LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (μSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

PHANTOM LAKE MINE – DETAILED SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.26–3**

mineralization is associated with a main fault which strikes 284° and dips 85° N to 70° S and a branch fault which strikes 335° and dips 50° to 70° E.

Along the main fault, the altered (silicified, chloritized, and carbonatized) and fractured hornblende granodiorite is cut by numerous stringers and narrow (up to 20 ft or 6.1 m wide) brecciated veins of white to grey quartz and chlorite-carbonate which contain pyrite, chalcopyrite, scheelite, and molybdenite. The only visible mineralization in the main fault is pyrite. The branch fault hosts scheelite, chalcopyrite, and gold mineralization. The mineralization occurs a few hundred feet west of the granodiorite-volcanic contact. The mineralized zone is discontinuous along strike. Minor sulphide showings are common locally, near the contact.

One drillhole was completed on the ore zone and returned 0.01 to 2.84 oz/ton Au and 0.12 to 41.2 oz/ton Ag. Surface samples in the area gave 0.01 oz/ton Au, 0.12 to 0.48 oz/ton Ag and 3.43% Cu.

A trench close to hole No. 9 was channel sampled and returned 7.58 oz/ton Au and 7.30 oz/ton Ag over 12 cm. A 30 cm channel sample taken from the shaft returned 18.80 oz/ton Au. A 1 m channel sample taken nearby returned 6.54 oz/ton Ag. The grade of ore shipments was 1.30 to 3.78 oz/ton Au and 2.5 to 4.7 oz/ton Ag.

6.26.4 Exploration History

The property was first staked as the PHANTOM claim in 1921. Between 1936 and 1937, Mr. R. E. Graham completed minor trenching in the showing. The claims were brought to lease by Mr. R. E. Graham in 1952.

In the winter of 1933, ore was taken from a quartz lens for flux at the Flin Flon Smelter. In 1942 a sample from the property submitted to the Mines Branch in Ottawa, assayed 1.04% WO_3. Tungsten was reported in a gold-bearing quartz vein and drill core.

Reported development work by 1960 consisted of the sinking of a single-compartment vertical shaft to a depth of 12.2 m (40 ft), one large trench, and 10 small trenches and pits. In this year, 13 tons of ore were mined. In 1965-66 the International Minerals and Chemical Corp. (Canada) Ltd.'s DAN and DEE claims covered the area. At this time, a program of geological mapping, prospecting and sampling and limited diamond drilling of 1 hole totalling 7.9 m (26 ft) was conducted. An EM survey was conducted in 1965. Both EM and Mag surveys were conducted by Semiahmoo Petro-Mines in 1970. By 1979, the showing was within JERRY claim No. 8. In 1983, the showing was covered by CBS 3182. In 1985, SMDC completed reconnaissance geological mapping and rock and forest litter sampling over the property. Samples from showing trenches returned up to 0.032 oz./ton Au, 2.5 ppm Ag, >4,000 ppm Cu and 100 ppm Zn.

By 1986, the showing had been staked as S-96187. In 1986, SMDC completed ground VLF-EM and magnetic surveys over the Phantom grid and geologically mapped the property. In the following year, SMDC completed further ground EM and magnetic surveys on the Phantom grid which covered the showing.

In 1998, Callinan Mines Limited optioned CBS 3182 and completed ground TDEM and magnetic surveys over the claim block.

6.26.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.26.5.1 General

The Phantom Mine site was inspected on 27 October 2002. There was a 5-cm to 7-cm thick snow cover over 90 per cent of the ground surface. Light snow was falling during part of the inspection. Due to frozen channels between islands on Phantom Lake that prevented boat passage, access to the site was achieved by walking 2.3 km to the site from the Mystic Lake haul road. The starting point on the Mystic Lake Road was 8.8 km south of Highway 167. A marked snowmobile trail, between Boot Lake and Phantom Lake, allowed for easy walking for that portion of the traverse.

The site was located near the top of low, broad hills just south of Phantom Lake. Three separate areas of workings were located (within 80 m of each other), consisting of rock pits and trenches, and an overburden trench. There was no evidence of recent visitation. Numerous cut-lines and drill roads cross the site area.

Forest vegetation is dominantly spruce, with some poplar and birch. Forest cover is sparse to moderate at the top of the bedrock hills, but thicker in-between the bedrock exposure.

6.26.5.2 Mine Workings

According to the SMDI inventory a 12 m deep shaft and a “large trench” were completed in 1960, along with 10 other smaller trenches and pits. However, a distinct shaft and large trench could not be located during the inspection. There is the possibility that the 15 m shaft was one of the pits observed at the various working areas inspected.

The No. 1 Workings (name assigned for this investigation) are the largest, and consist of four rock pits and a smaller rock cut. Pit dimensions are generally 3 m x 1.8 m to 2.4 m and 1.8 m deep. Ice was observed at the bottom of each pit, and is likely accumulated precipitation. Walls of the excavations appear solid and stable, although there appears to be some soil overhang at edges.

A water sample from Pit 'B' at the No.1 Workings was taken. Analytical results are provided in Table 6.26-1. Field measurements of physical parameters for the water sample were as follows:

Date:	27 October 2002
Time:	12:15 p.m.
pH	8.05
Conductivity:	56 µS/cm
Temperature:	+ 0.9^{o}C

The pit water is moderately mineralized with aluminum (0.20mg/L), arsenic (3.4 µg/L), zinc (0.3 mg/L) and is slightly acidic (pH 6.17). All other parameters were below applicable Saskatchewan Surface Water Quality Objectives for the Protection of Aquatic Life and Wildlife.

The No. 2 Workings (assigned name) consist of a rock trench (1 m x 4.6 m), a rock pit (1.2 m x 1.5 m) and a small rock cut (1 m x 1 m) blasted into the outcrop. The trench and pit are about 1.2 m deep. Walls of the excavations appear solid and stable.

The No. 3 Workings (assigned name) consists of a single overburden trench with dimensions of 1.2 m x 4.6 m and a depth of 1.2 m.

Small spruce trees (2-cm to 10-cm diameter) and brush have grown in along the edges of the various pits and trenches.

The trenches do not pose a serious public safety or environmental hazard due to their shallow depths, open visibility, and distance from the shoreline.

Table 6.26-1
Phantom Lake Site-Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.200	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	3.40	0.05
Boron (B)	mg/L	0.003	
Barium (Ba)	mg/L	0.009	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.003	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.019	0.01
Molybdenum (Mo)	mg/L	0.002	
Nickel (Ni) (4)	mg/L	0.002	0.025
Phosphorous (P)	mg/L	0.020	
Lead (Pb)	mg/L	0.005	0.02
Selenium (Se)	mg/L	<0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.002	
Strontium (Sr)	mg/L	0.030	
Titanium (Ti)	mg/L	0.002	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.310	0.05
Total Major Metals			
Calcium (Ca)	mg/L	6.50	
Potassium (K)	mg/L	0.500	
Magnesium (Mg)	mg/L	1.80	
Sodium (Na)	mg/L	<0.5	
Iron (Fe)	mg/L	0.920	1
Manganese (Mn)	mg/L	0.110	
Silicon (Si)	mg/L	1.60	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	6.17	
Radionuclides			
Uranium (U)	mg/L	n/a	0.1 to 0.2 (2)
Lead-210	Bq/L	n/a	
Polonium-210	Bq/L	n/a	
Radium-226	Bq/L	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

One diamond-drill hole location was observed, and was identified by a wooden post driven into the bedrock collar. No refuse was seen at this location.

6.26.5.3 Waste Rock

Small amounts of coarse waste rock were observed alongside the various rock pits and trenches. The volume of rock appears to be equal to the size of the excavation. Visible waste rock appeared to be unmineralized. At the overburden trench, shallow mounds of soil were piled alongside both sides of the trench. Sparse brush has grown in on parts of some of the waste rock piles. The low sloped waste rock piles do not appear to present a public safety or environmental hazard.

6.26.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.26.5.5 Debris

No debris was observed, however, there was a continuous snow cover that may have obscured smaller items.

6.26.5.6 Site Buildings

No buildings or ruins were observed.

6.26.6 History of Previous Inspections

The Phantom Lake site has been previously inspected by Saskatchewan Environment.

6.26.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	2
Combined Total Assessment	12
Ranking	18/26

The site is near a marked snowmobile trail, from which old drill roads lead to the site, thereby increasing the chance of casual visits to the site. Furthermore, the location of a reported 12 m deep shaft could not be found and may potentially be a hazard. Therefore 1.5 points were attributed to the “additional public safety risks’ category.

6.26.7 Recommended Follow-up

The primary follow-up work should be a further attempt to locate the reported 12 m shaft and large trench, and determine if there conditions poses a public safety hazard. Follow-up work for the shallow trenches and pits at the No. 1, No. 2 and No. 3 workings is not required since the site is distant from view. Although snowmobilers could access the site via drill roads crossing a nearby marked snowmobile trail, the likelihood of driving to the site is anticipated to be low.

Photograph 6.26-1. Phantom Lake Mine-No. 1 Working Area Overview-October 27, 2002.

Photograph 6.26-2. Phantom Lake Mine-No. 1 Workings Pit 'C'-October 27, 2002.

Photograph 6.26-3. Phantom Lake Mine-No. 2 Workings Trench 'A'-October 27, 2002.

Photograph 6.26-4. Phantom Lake Mine-No. 3 Workings Overburden Trench-October 27, 2002.

6.27 Dion Lake North Copper Showing and Shaft

6.27.1 Location and Access

Site Inspection: 27 October 2002

Location: NTS Mapsheet 63 K/12
UTM Zone: 14

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 42’ 42” lat 101° 53’ 27” long	6066327 m N 313774 m E	6066342 m N 313683 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 300 m northwest of Dion Lake. The site is accessible by driving 5.3 km south on the Mystic Lake Road (beginning from Highway 167 in Flin Flon), and then walking 500 m east toward Dion Lake. An old drill road (useable as a snowmobile or ATV trail) leads from Mystic Road directly to the site.

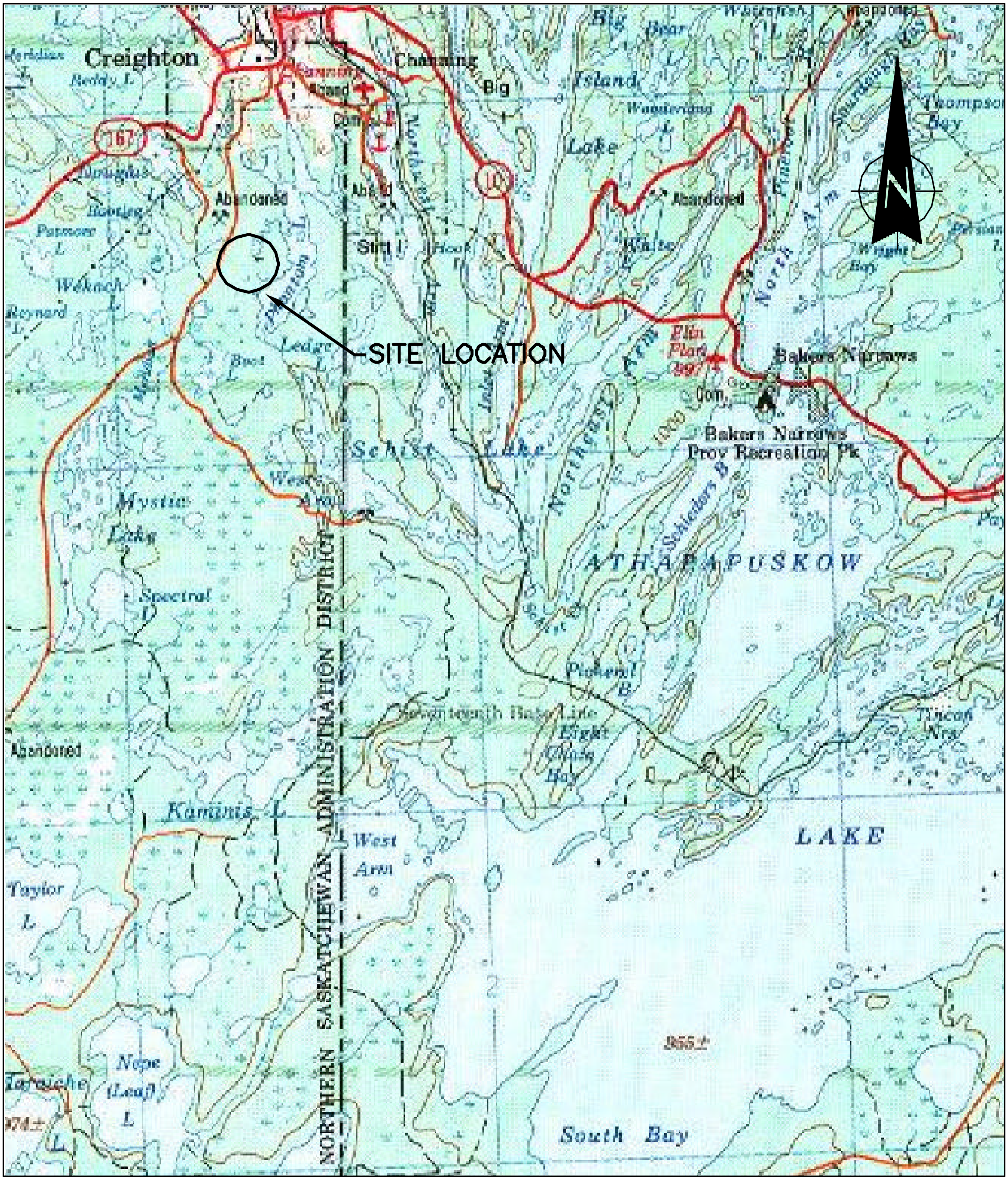
The site location is shown in Figure 6.27-1. The site plan is shown in Figure 6.27-2. Photograph No. 6.27-1 provides an aerial view of the site and Photograph No. 6.27-2 shows the exploration shaft at the site.

6.27.2 Property Information and Ownership

Property: (formerly: ML 5168; LUVK claims; MAY claims)
Saskatchewan Mineral Deposit Index Number: 0025
Location: Dion Lake – northwest of
Owner(s): Open - see Section 6.27.4 for previous owners
Commodity: Cu **Associated Commodities:** Au; Zn; W
Deposit Type: Adit or shaft

6.27.3 Geology

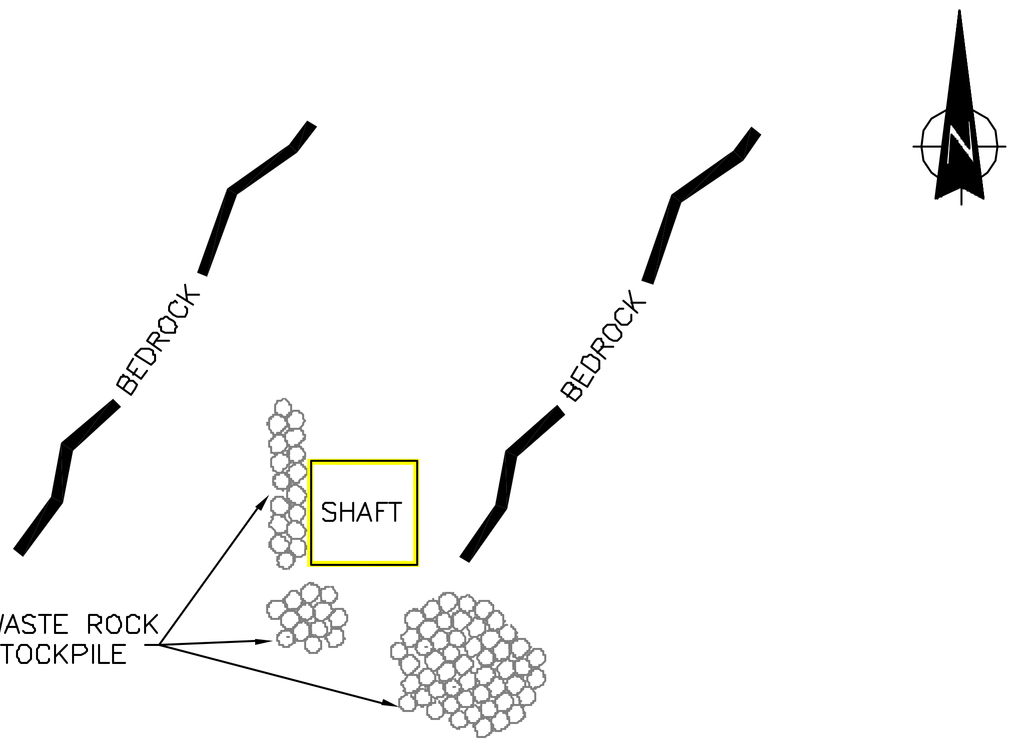
The showing is located approximately 259 m (850 ft) west of the northern end of Dion Lake and 488 m (1,600 ft) north-northwest of the south showing. The showing is exposed in a (3.0 x 3.7 x 9.1 m (10 x 12 x 30 ft) shaft.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
DION LAKE NORTH SHOWING AND SHAFT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.27-1



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	●
Soil Sample Location	●

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

DION LAKE NORTH COPPER SHOWING AND SHAFT–SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.27–2**

The area of the showing is underlain by fractured and mineralized Boot Lake granodiorite. A thin east-west trending dyke of Phantom Lake granite is found 30 m (100 ft) or less to the south of the shaft.

The mineralization which consists of pyrite, pyrrhotite, sphalerite, chalcopyrite and minor bornite and native copper is unevenly disseminated within the granodiorite, with greater concentrations occurring along short, irregular, random fractures. Pyrite is the oldest mineral. It was replaced by pyrrhotite, sphalerite, and finally chalcopyrite. Chalcopyrite, the most abundant sulphide, occurs as irregular masses and stringers. A sample from the rock dump at the shaft is reported to have assayed at 7.24% Cu and 0.02 oz/ton Au. In 1959, Little reported the presence of scheelite at the Dion Lake deposit.

6.27.4 Exploration History

The showing is exposed in a 9 m deep exploration shaft reportedly dug prior to 1946 on the MAY 419 to 421 claims held by May Dion. These claims staked in 1920 went to lease in 1926 and were renewed in 1947.

The Meridian Mining and Exploration Co. Ltd. acquired the LUCK claims covering the area in 1966. Between 1966 and 1967, Meridian completed an electromagnetic, Induced Polarization (IP) and resistivity survey, as well as five drill holes. In 1973, Flin Flon Mines Ltd. completed an IP survey on the property. The area went to lease as ML 5168 in 1976.

In 1973, Flin Flon Mines Ltd. optioned the property. In 1973, Flin Flon Mines completed an IP survey and drilled six holes totalling 370.9 m (1,217 ft) that intersected minor sulphide mineralization. Five of the holes were completed adjacent to the exploration shaft and the sixth hole was drilled 320 m northeast of the shaft. Drill hole 1, which intersected the main copper zone beneath the shaft, hit 1.7 m of 30% sulphide that assayed 1.66% Cu, 0.51% Zn, 1.98 oz./ton Ag and 0.17 oz./ton Au.

In 1976, the claims went to lease ML 5168. Vista Mines Inc. acquired the property in 1986. Vista Mines completed ground VLF-EM and magnetic surveys over the showing area. In 1978, Flin Flon Mines completed a ground magnetic survey over the showing.

6.27.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.27.5.1 General

The Dion Lake Showing and Shaft site was inspected on 27 October 2002. There was a 5-cm thick snow cover over 85 per cent of the ground surface. Site access was by vehicle along the Mystic Lake haul road and then a 500 m long walk to the site across barren outcrop. The shaft and adjacent waste rock piles are readily visible from the ground and the air. Extensive, low-rising (about 6 m high), shallow sloped and barren outcrop is prominent.

Although there was no evidence of recent visitation at the site itself, ATV tracks were visible on the old drill road leading to the site.

Vegetation is sparse and a more recent forest fire that has burnt the surrounding area. Burnt lengths of trees are scattered about the site. Jack pine (1 m to 2 m high) has begun to re-vegetate the area.

6.27.5.2 Mine Workings

Mine workings consisted of a single open shaft, approximately 3 m square at the surface and narrowing to 2.4 m with depth. The shaft was flooded with clear water to a depth of 2.7 m below the top of the shaft. Evidence of water discharge from the shaft was not seen. Shaft walls are solid and stable, with minor amounts of small loose, in-place rock at the top of the shaft opening. A carpet of small-sized waste rock covers the local area around the shaft opening and may present a trip / sliding hazard when walking around the opening. The hazard to wildlife is high since animals could not escape from the shaft if they accidentally fall into it

A water sample of the shaft water was collected. Analytical results are provided in Table 6.27-1.

Field measurements of the water were as follows:

Date:	27 October 2002
Time:	3:00 p.m.
pH	5.65
Conductivity:	402 µS/cm
Temperature:	+ 4.5°C

insert table 6.27-1

Table 6.27-1
Dion Lake Site-Shaft Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	7.800	
Antimony (Sb)	mg/L	<0.001	
Arsenic (As)	ug/L	0.700	0.05
Boron (B)	mg/L	0.012	
Barium (Ba)	mg/L	0.014	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	<1	
Cadmium (Cd)	mg/L	0.061	0.001
Cobalt (Co)	mg/L	0.210	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	23.0	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	0.029	0.025
Phosphorous (P)	mg/L	0.010	
Lead (Pb)	mg/L	0.026	0.02
Selenium (Se)	mg/L	0.001	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	<.002	
Strontium (Sr)	mg/L	0.027	
Titanium (Ti)	mg/L	<0.001	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	4.20	0.05
Total Major Metals			
Calcium (Ca)	mg/L	20.0	
Potassium (K)	mg/L	1.80	
Magnesium (Mg)	mg/L	7.10	
Sodium (Na)	mg/L	1.00	
Iron (Fe)	mg/L	0.14	1
Manganese (Mn)	mg/L	1.80	
Silicon (Si)	mg/L	6.90	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	4.22	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997).

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

The shaft water is mineralized with aluminum (7.8 mg/L), arsenic (0.70 µg/L), cobalt (0.210 mg), copper (23.0 mg/L), nickel (0.029 mg/L), lead (0.026 mg/L), zinc (4.2 mg/L) and is acidic (pH=4.22).

6.27.5.3 Waste Rock

Three waste rock piles were located beside the shaft. The largest pile was about 1.5 m high with a 4.5 m diameter, having an estimated volume of 10 m^3. A smaller pile was about 1 m high with a 2.1 m diameter, having an estimated volume of 2 m^3. Both of these conical piles contained essentially unmineralized granodiorite. A windrow (6 m long by 1.2 m wide and 0.6 m high) of waste rock containing sulphidized rock was estimated to have a volume of 4 m^3. The waste rock piles have no vegetation cover and do not appear to present a public safety or environmental hazard.

6.27.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.27.5.5 Debris

A burnt wooden platform, with steel fastening hardware, was located within 5 m of the shaft. Lengths of burnt tree have either fallen into or have been thrown into the shaft, and are jammed in the opening. The debris does not appear to present a public safety or environmental hazard.

6.27.5.6 Site Buildings

No buildings or ruins were observed.

6.27.6 History of Previous Inspections

No records of previous inspections were located.

6.27.7 Risk Assessment Ranking

Public Safety Assessment	13
Environmental Assessment	5
Combined Total Assessment	18
Ranking	9/26

The site is located near an old drill road that is used as an ATV / snowmobile trail, and thus increases the chance that recreational vehicles could pass over and fall into the open shaft should it be obscured. Furthermore, footing around the shaft opening is of concern due to loose waste rock that presents a trip hazard. Therefore, two points were attributed to the "additional public safety risks" category.

6.27.8 Recommended Follow-up

Follow-up activities should focus on sealing the exploration shaft since it poses a public safety risk to snowmobilers, hikers etc. The shaft should be secured with a concrete cap or filled-in with local unmineralized waste rock or imported rock. . Hazard warning placards should be posted should reclamation activity be delayed.

Photograph 6.27-1. Dion Lake Showing and Shaft-Collecting Water Sample at Exploration

Photograph 6.27-2. Dion Lake Showing and Shaft-Aerial View-October 23. 2002.

6.28 Henning Maloney Mine

6.28.1 Location and Access

Site Inspection: 27 October 2002

Location: NTS Map Sheet 63 K/12
UTM Zone: 14U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54^o 42’ 42” lat 101^o 54’ 46” long	6065768 m N 312335 m E	6065782 m N 312468 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located 5.5 km south of the Town of Creighton, east of the south end of Bootleg Lake. The site is accessible by driving 4 km south on the Douglas Lake Road , beginning from Highway 167.

The site location is shown in Figure 6.28-1. The site plan is shown in Figure 6.28-2. Photograph Nos. 6.28-1 to 6.28-6 show the site.

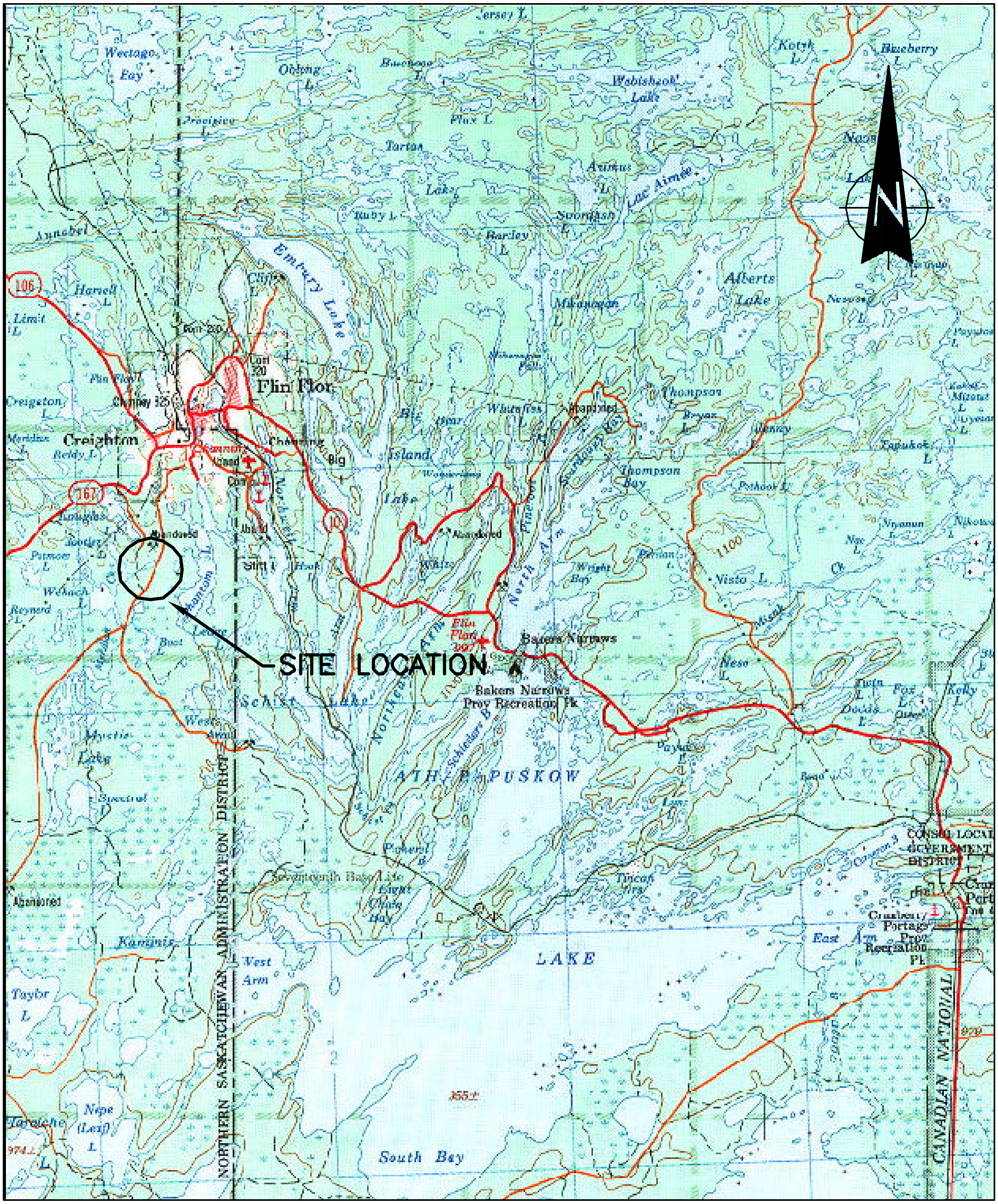
6.28.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0006
Property: Henning-Maloney Au Mine
Location: Bootleg Lake – east of south end
Owner(s): Open – see Section 6.28.4 for previous owners
Commodity: Au **Associated Commodities:** As; Au
Deposit Type: Outcrop

6.28.3 Geology

The Henning Maloney Mine is located 335 m (1100 ft) east of the south end of Bootleg Lake.

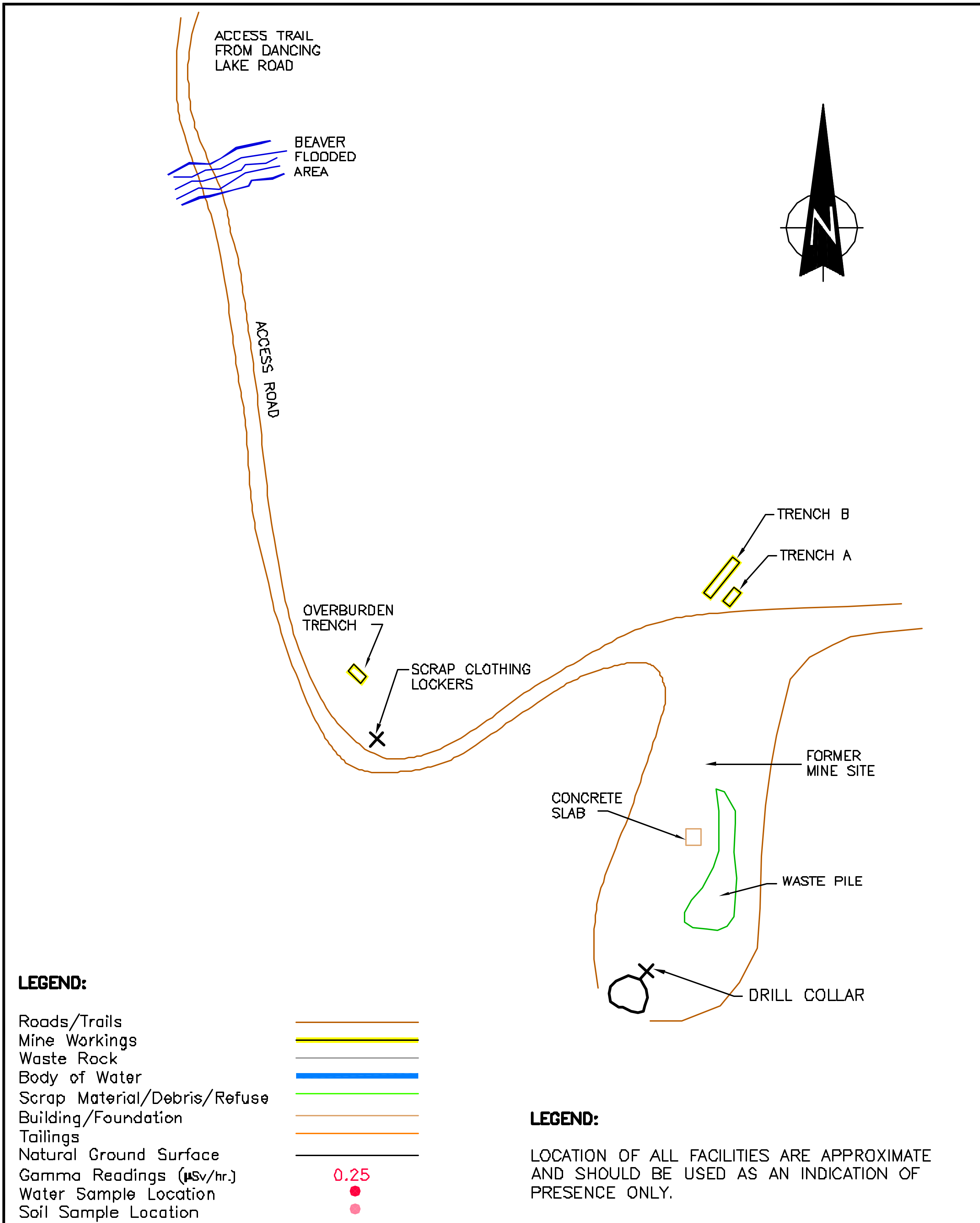
The mesothermal mineralization consists of quartz-carbonate-pyrite- chlorite-muscovite-chalcopyrite-pyrrhotite-arsenopyrite-gold veining within a series of phase 3 shears which are felt to be a subsidiary to the Rio Fault. The northeast-trending shears are associated with a dioritic 'dyke' border phase of a granidioritic body, intruded into the Amisk Group volcanics to the north. The vein walls are bleached, moderately to highly silicified, chloritized, and carbonatized. Alteration decreases away from the vein margins. The main ore zone or 'shaft'



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
HENNING MALONEY MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.28–1



HENNING MALONEY MINE – GENERAL SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.28–2

shear consists of a 043° striking, 70°SE dipping, 1.5 to 2.4 m (5 to 8 ft) shear paralleling the hanging wall of the dyke, which has a width of 0.6-1.8 m (2 to 6 ft) and length of 61.0-91.4 m (200 to 300 ft). Quartz veins and lenses in the footwall were also found to be gold bearing.

Mine assays indicated 0.28 oz/ton Au over 99 cm (39 inches) for a length of 24.4 m (80 ft), in the foot wall on the 30 m (100 ft) level, and 0.28 oz/ton over 91 cm (36 inches) for a slope distance of 12.2 m (40 ft) in a raise.

6.28.4 Exploration History

The property was first staked by P.J. Maloney and A.J. Henning in 1931 at which time trenching was done and a small prospect shaft was sunk on a quartz vein (ANN claims).

During 1933 to 1934, the property was acquired by the Henning Maloney Gold Mines Ltd. and a two compartment shaft was sunk to 49.4 m (162 ft). By 1941, intermittent mining had developed 305 m (1,000 ft) of drifts and cross cuts and two 34.1 m (112 ft) raises. Trenching and diamond drilling were also completed during this period.

Several shipments of ore were made to the Flin Flon Smelter in 1940 from a stope above the 15.2 m (50 ft) level. The mine was closed in 1941, and the buildings were later destroyed by fire. The head frame still stands.

Further diamond drilling was reported on the property in 1964 by Central Manitoba Mines Ltd. on the HUNT claims. Ten holes were drilled, intersections of which assayed minor Au, Cu and Mo values. EM surveys were recorded in 1967 and 1969 by Flin Flon Mines Ltd., and further diamond drilling during 1969-1970. An Induced Polarization (IP) survey was recorded by Meridian Mining and Exploration Company Limited in 1973.

In 1983, Vista Mines Ltd. announced proven and possible reserves for the mine (Northern Miner 1/9/1983, 3/11/1983).

6.28.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.28.5.1 General

The Henning Maloney Mine site was inspected on 27 October 2002. A follow-up visit, to search for evidence of a shaft cap, was completed on 28 October 2002. Site access was achieved by vehicle, using the Douglas Lake Road to within 300 m of the site, where the gravel road was blocked by flooding due to a beaver dam. The remaining distance was walked along the road which crosses the site and continues eastward. Snow, up to 7 cm thick, covered the entire ground surface. Recent visitation was evident by vehicle tire tracks on the access road into the site. Local habitants frequently use the Douglas Lake Road as a dog-walk. A cut trail exiting Bootleg Lakes and a snowmobile trail guide sign suggest the Douglas Lake Road and off-branching bush roads are used as snowmobile trails.

The site has been reclaimed, leaving only a clearing that is being encroached by scrub brush and small poplar trees. The clearing is bounded by the access road to the north and an alder grove to the south. Hummocky bedrock outcrops occur on the north, east and west sides of the site. The former mine area is flat and gently sloped to the south. Grasses and minor scrub bush cover parts of the central portion of the site.

6.28.5.2 Mine Workings

The clearing where the mine was located is approximately 70 m by 180 m covering an area of approximately 1.26 hectares. No evidence of the two-compartment shaft was found. It appears the shaft has been sealed and covered with waste rock. The headframe no longer exists.

Two shallow, old rock trenches were found at the north end of the site, parallel to each other. Trench ‘A’ is 6 m long, 1.5 m wide and 1.2 m deep. Trench ‘B’ is 30 m long, about 1.5 m wide and up to 0.6 m deep. Dioritic rock with quartz stringers are exposed in the trenches, as well as metavolcanic rock in shear contact with the diorite. The trenches were dry.

Two additional small and shallow trenches were found about 30 m north of Trench ‘B’.

An overburden trench was observed beside the access road, about 200 m west of the site. The trench is 4.6 m long and 2 m wide and deep, and ingrown with scrub brush.

The shallow rock and overburden trenches are not a significant public safety hazard.

Six drill collars, with protruding casings, were found; two on the south edge of the site, and four to the east of the waste rock pile.

6.28.5.3 Waste Rock

It appears that most of the waste rock has been spread around the site during a past reclamation program. Based on the size of the clearing (70 m by 170 m) and possible 0.3 m depth of spread rock, and the known length of underground workings[7], an approximate estimate of the waste rock volume is in the range of 1,200 m^3 to 4,000 m^3. Snow obscured much of the ground surface, but the visible waste rock did not appear to be sulphide stained. Precipitation and meltwater would be expected to drain southward to the adjacent marshy alder grove, a lowland surrounded by bedrock knolls.

A windrowed stockpile of coarse waste rock is situated along the east side of the clearing. It is 36 m long, and varies in width and height, increasing in volume to the south. At the north end, the pile is 1 m high and 3 m wide, and at the south end it is 3 m high and 5 m wide. The estimated volume is 120 m^3 and includes about 15% sand and gravel. The waste rock is a diorite.

A separate stockpile of sand and gravel is situated at the south end of the site. The estimated volume is 20 m^3.

A minor amount of coarse waste rock is piled along the edges of the trenches.

6.28.5.4 Debris

A minor amount of debris was visible at the site, and included the following: (1) an empty and crushed 205-L steel drum mixed with burnt pieces of scrap lumber – at the north end of the waste rock pile; (2) a 3 m length of 10 cm diameter steel pile – on the west side of Trench ‘B’; and, (3) pieces of scrap lumber scattered around Trench ‘A’ and ‘B’.

---

[7] Assumed shaft dimensions: 1.8 m x 3 m. Assumed drift dimensions: 1.5 m x 1.8 m. Assumed raise dimensions: 1.2 m x 1.2 m.

Two sets of metal clothing lockers have been thrown into the bush beside the access road, 200 m east of the site.

The debris does not appear to present a public safety or environmental hazard.

6.28.5.5 Site Buildings

A small concrete pad (2.4 m by 3 m) is located at the north-central portion of the site. It does not present a public safety or environmental hazard.

6.28.6 History of Previous Inspections

No record of previous inspections was located.

6.28.7 Risk Assessment Ranking

Public Safety Assessment	8.5
Environmental Assessment	2
Combined Total Assessment	10.5
Ranking	23/26

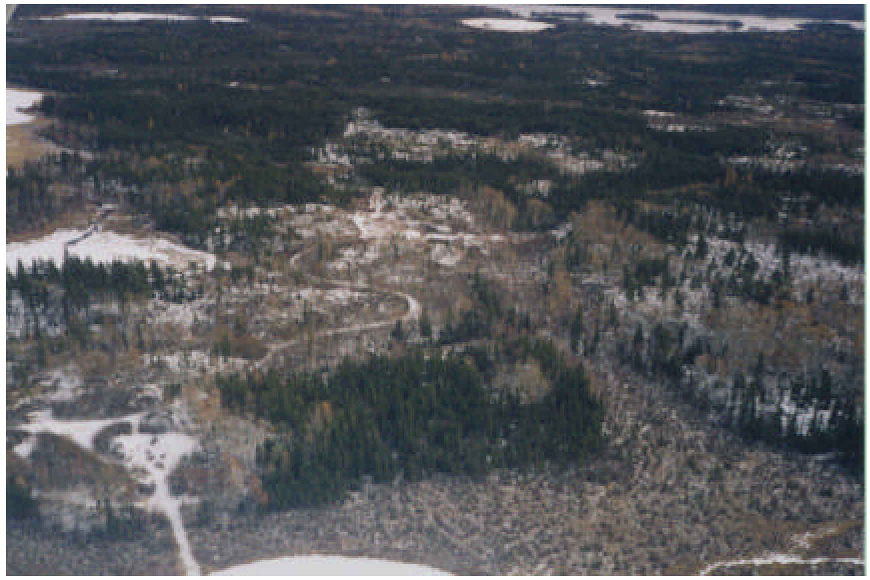
The presence of two trenches beside the snowmobile trail/road that passes through the site increases the chance of snowmobilers hitting the trench, particularly if obscured by snow. Thus, one point was attributed to the “additional public safety risks” category. Surface run-off is toward and into a wet lowland area, and therefore one point was attributed to the “additional environmental risks” category.

6.28.8 Recommended Follow-up

Overall, the site does not pose a major public safety hazard since the site has been decommissioned leaving no shaft opening or other underground openings. Nevertheless, there is a potential safety concern with open trenches into which snowmobiles may be driven. The trenches should be backfilled with the available waste rock. Minor metal debris on the site should be picked up for salvage or properly disposed.

Based on site observations the site does not appear to pose significant environmental risk. The generally unmineralized waste rock spread about the site does not appear to present an acid drainage issue.

Photograph 6.28-1. Henning Maloney Mine-Aerial View-October 23, 2002.



Photograph 6.28-2. Henning Maloney Mine-Overview of Site Showing Waste Rock Pile-October 27, 2002.

Photograph 6.28-3. Henning Maloney Mine-Trench 'A'-October 27, 2002.

Photograph 6.28-4. Henning Maloney Mine-Debris-October 27, 2002.

Photograph 6.28-5. Henning Maloney Mine-'Trench 'B'-October 27, 2002.

Photograph 6.28-6. Henning Maloney Mine-Concrete Pad-October 27, 2002.

6.29 Coronation Mine

6.29.1 Location and Access

Site Inspection: 26 and 28 October 2002

Location: NTS Map Sheet 63 K/12
UTM Zone: 14U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
53° 35' 05" lat 101° 59' 46" long	6052493 m N 306391 m E	6052506 m N 306407 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 20 km southwest of the Town of Creighton along the east shore of Phil Lake. The site is directly accessible by either: (a) the Birch Lake/Maraiche Lake Road, beginning from Highway 167, going a distance of 12.8 km; or (b) the Mystic Lake Road, beginning from Highway 167 in Flin Flon, going a distance of 21 km.

The site location is shown in Figure 6.29-1. The site plan is shown in Figure 6.29-2. Photograph Nos. 6.29-1 to 6.29-9 show the site.

6.29.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0023
Property: formerly: ML 4811 + ML 4814; CBS 3745; TIK claims 163 and 166 claims
Location: Phil Lake – east shore
Owner(s): Open – see Section 6.29.4 for previous owners
Commodity: Cu **Associated Commodities:** Zn; Au; Ag; Se; Te; Cd
Deposit Type: Drillhole

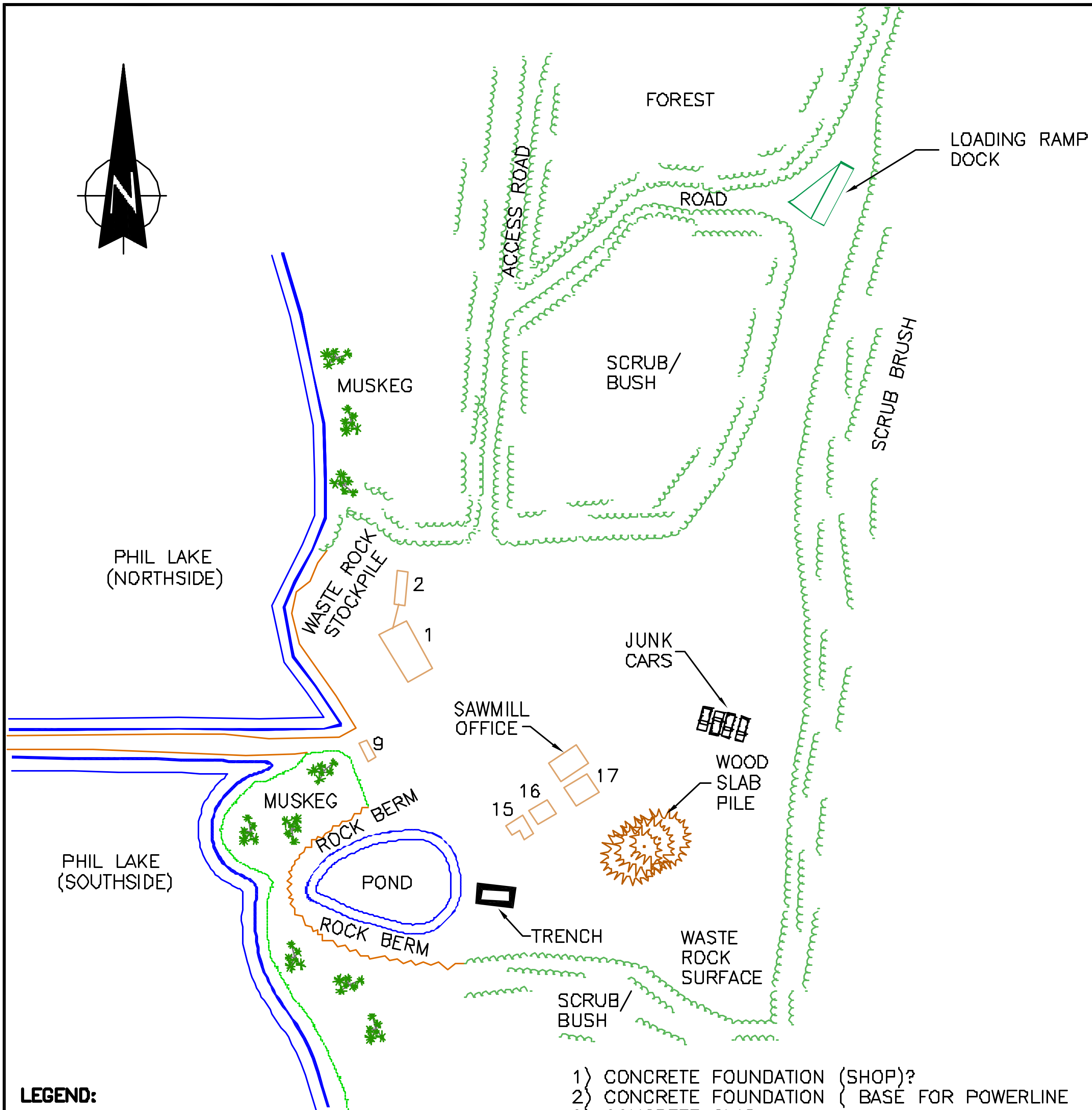
6.29.3 Geology

The Coronation Cu-Zn Mine is located on the northwest shore of Phil Lake, a small lake located approximately 13.7 miles (22 km) southwest of Flin Flon. The orebodies, which are not exposed at surface, are contained within a northwesterly trending, southwesterly dipping sequence of massive Amisk Group basaltic amygdaloidal and pillowed flows. East of the mine, the basaltic rocks are overlain by basaltic to andesitic pyroclastics and semi-conformable quartz-feldspar porphyry.

NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
CORONATION MINE

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.29-1



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	●
Soil Sample Location	●

1) CONCRETE FOUNDATION (SHOP)?
2) CONCRETE FOUNDATION (BASE FOR POWERLINE
9) CONCRETE SLAB
15) SHAFT AND CONCRETE SLAB
16) CONCRETE SLAB (BUILDING ?)
17) CONCRETE SLAB (BUILDING)

NOTE:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

CORONATION MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.29–2**

The mine horizon consists of a tuffaceous horizon that separates the basaltic flows and the overlying pyroclastics. The Coronation orebodies occurred as replacements in a zone of shearing in a dilatent section of a major N trending fault structure which truncates, but locally parallels the bedding, enclosing Amisk Group volcanic rocks. The zone follows the discontinuous basic tuffaceous unit occurring at the contact of, and below, a massive to pillowed andesite or andesite breccia and overlying an amygdaloidal flow. The zone has been traced for a length of 4 miles (6.4 km), and over most of its length it lies 304.8 to 1524 m (1,000 to 5,000 ft) west of large bodies of granodiorite and gabbro. The rocks have been metamorphosed to lower amphibolite facies.

The deposit, which has a width of approximately 20 m (65.6 ft) over a strike length of 215 m (705.4 ft) and a depth of 335 m (1,099.1 ft), consists of three oreshoots within a zone of lower-grade mineralized rock. The mineralized area is 274.2 m (899.6 ft) long, up to 36.6 m (120.1 ft) wide, and extending vertically to a little over 304.8 m (100.0 ft). In addition to the pyrite-pyrrhotite-chalcopyrite-sphalerite mineralization, the deposit contains rare, relatively narrow, flat-lying, narrow veins of chalcopyrite-tetrahedrite-calcite.

The Coronation Deposit is a metamorphosed copper-rich massive sulphide deposit formed by the relatively small massive North Lens, which makes up less than 20% of the deposit and which grades ± 6.5% Cu. The North Lens is underlain by a larger alteration pipe. This pipe, or the South and HW lenses, which grades ± 4.5% Cu, forms over 80% of the deposit. The pipe alteration consists of a lower amphibolite sequence of anthophyllite-cordierite-magnetite-gahnite.

The North Lens is a tabular massive sulphide lens with a sharp footwall contact (against volcanics) and a gradational hanging wall contact (with cordierite-anthophyllite rock). The lens contains two types of ore. The first type or the massive pyrite-chalcopyrite ore (up to 100% pyrite in places) consists of pyrite, silicates, and subordinate chalcopyrite, sphalerite and magnetite. The second ore type, or the massive pyrrhotite-chalcopyrite ore, is made up of roughly equal amounts of pyrrhotite and chalcopyrite and lesser silicates with subordinate sphalerite and magnetite. This ore type consists of alternating layers of pyrrhotite-rich and chalcopyrite-rich ore. Rare massive sphalerite occurs locally.

The South Lens forms over 75% of the deposit. It comprises sulphide stockworks and overgrowths, which reflect a possible footwall alteration pipe within a silicate gangue. The sulphides form 10 to 20% of the ore by volume. The South Lens mineralization consists of chalcopyrite, pyrrhotite, magnetite and gangue minerals with subordinate pyrite, sphalerite and illmenite. The gangue minerals include anthophyllite, cordierite, biotite, quartz, chlorite and lesser andalusite, cummingtonite and gahnite. This silicate-sulphide ore exhibits a streaky layering parallel to foliation.

The HW lens consists of a anthophyllite-cordierite rock intermixed with sulphides. The sulphide-silicate content of the HW lens is 10 to 20% sulphide by volume and the mineralogy is similar to that of the South lens. Streaky layering is prominent throughout much of the lens.

6.29.4 Exploration History

The Coronation Mine was first located on claims Tik 166 (ML 4814) and Tik 163 (ML 4811) on the NE shore of, and underlying, Phil Lake. They were characterized by diamond drilling in 1953 on an electromagnetic anomaly outlined the previous winter. Fifty-five delineation drill holes outlined an orebody with a strike length of 215 m (705 ft), a width of 20 m (65.6 ft) and a depth of 335 m (1,100 ft). Reserves were initially released in 1953. Revised reserve figures were released in 1969.

During the period 1955 to 1958, a 3-compartment production shaft to a depth of 454.8 m (1,492 ft) with levels at 50 m intervals to the 408.4 m (1,340 ft) horizon as well as a 2 compartment service shaft to a depth of 322.2 m (1,057 ft), located 24.3 m (80 ft) southeast of the main shaft, were completed. A total of 261 underground drill holes were used to calculate an indicated reserve figure for the deposit.

Mining commenced in 1960. The lowering of the cut-off grade to 0.9% and the discovery of additional ore, resulted in a larger than expected final recovery. The deposit was mined out in 1964 and the mine was closed in 1965. In 1981, Hudson Bay Exploration and Development completed ground EM and magnetic surveys and one drill hole in the vicinity of the mine on TIK claims Nos. 163 and 166.

On 25 September 1985, Coronation Mines Ltd. (50%) and Freewest Resources Inc. (50%) staked the showing as CBS 3745. In 1988, L. Clark and Associates completed ground IP/ resistivity surveys over the minesite area. In 1989, the partners completed geological mapping, prospecting, and rock sampling over a grid which covers the minesite. Between 1989 and 1990, the partnership completed drill hole CF-13, approximately 500 m north northeast of the mine shaft. The hole failed to intersect significant mineralization.

On 20 March 1986, TIK claim No. 163 was converted to ML 4811 and TIK claim No. 166 was converted to ML 4814. In 1990, Hudson Bay completed drill holes COR90-1 to -3 on the COR 1 grid to the north and south of the orebody to test the mine alteration package at a relatively deep level. The drill holes encountered several bands of pyrite-pyrrhotite-chalcopyrite ± sphalerite and arsenopyrite mineralization which returned up to 0.85% Cu and 0.26% Zn over 6.3 ft.

In February of 1995, Hudson Bay completed a ground TDEM survey on grid NER 31 which covered the showing.

6.29.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.29.5.1 General

Part of the Coronation mine site was first inspected on 26 October 2002. The site was occupied by the operations of B.W. Christienson Custom Sawmill. The entrance was blocked and the initial inspection was limited to an examination of the loading platform at the north margin of the site. Subsequently, entry permission was sought and received from Mr. Christienson, with the site visit completed on 28 October 2002. Direct site access was achieved by vehicle using the Birch Lake Road. Snow, 2 cm thick, covered nearly all of the ground surface.

The site is a 2 hectare clearing on the east shore of Phil Lake. The site has been reclaimed and graded level with crushed waste rock. Overall the property slopes gently westward and down toward Phil Lake. Mixed deciduous and conifer forest surrounds the site. Patchy regrowth of young poplar and scrub brush occurs on the site.

There remain several concrete foundations of former mine buildings and structures. On the west margin of the site is the “Raise Pond”, about 50 m in diameter, and surrounded by a berm of crushed waste rock. A 210 m long dyke runs across Phil Lake and divides it in half.

B.W. Christienson operates a custom sawmill on the site, producing rough cut timbers. Facilities include an office hut, two saws, and an assortment of sheds and an old bus used for parts and equipment storage. Junked vehicles (2 pickup trucks, 2 cars, 1 highway tractor) have been discarded on site. There are several large stockpiles of wood scrap in the centre of the site. Logs and cut timber is stacked at the sawmill operation.

6.29.5.2 Mine Workings

The only remaining mine workings are the shaft opening and the prominent Raise Pond. The shaft's headframe foundation is beside the Raise Pond. A small three-compartment opening is visible at one end of the foundation. The shaft has been back-filled with fine crushed rock (muck according to the sawmill operator), leaving only a 0.5 m deep opening with small trees growing out of it. The opening, if obscured, could be a trip and fall hazard.

Located beside Phil Lake, the 50 m diameter Raise Pond is surrounded by a berm of waste rock and the remnants of a chainlink fence. According to the sawmill operator, the pond was the location of a raise that was in-filled with waste rock when the site was reclaimed. The water level in the pond appears to correspond to the water level of Phil Lake, which suggests a hydraulic connection between the lake and Raise Pond. Encircling the pond is a rock berm with boulder-sized pieces of sulphide mineralized ore, often with secondary copper oxidation minerals. Much of the surrounding chainlink fence has been stolen, leaving only the metal posts. Currently, the pond is used in the summer by the sawmill as an emergency water supply for fire-fighting purposes. A wood platform and ladder allow access to the pond water for placement of the fire-pump. The very steep walls of the pond berm could be a fall hazard, and entrapped animals may have difficulty escaping. The water level in the pond, at the time of site visit, was about 1m below the top of the surrounding berm. Some scrub vegetation grows along the outer edge of the pond berm. The pond is readily visible. No hazard warning placards are present.

A water sample from the Raise Pond was collected for laboratory testing. Analytical results are provided in Table 6.29-1. Field measurements of physical parameters for the water sample were as follows:

Date:	28 October 2002
Time:	2:30 p.m.
pH	9.07
Conductivity:	564 µS/cm (collected sample re-tested as 1995 µS/cm)
Temperature:	+ 2.7°C

The pond water is generally of good quality with minor mineralization of copper (0.66 mg/L), strontium (4.9 mg/L), calcium (340.0 mg/L), magnesium (120.0 mg/L0) and sodium (240.0 mg/L).

6.29.5.3 Waste Rock

Waste rock is spread out all over the 2 hectare site and extends into Phil Lake and has been stockpiled at the northwest margin of the site. The overall volume of waste rock is likely to exceed several tens of thousands of tonnes, on the basis of considerable underground development including the mining of approximately 1.25 million tonnes of ore. Most of the waste rock is barren of vegetation.

The 4m high stockpile occupies a 14 m by 40m area, and is said by the sawmill operator to be used as a source of fill material when doing site grading. This waste rock is primarily of a mafic volcanic with about 10 per cent of the rock showing visible sulfides. The stockpile slopes are steep, but present no public hazard.

Waste rock has been used to build the ramp for the loading platform. The ramp is 27 m long, 20 m wide and 5 m high with an estimated volume of 1350 m^3 of broken waste rock. the waste rock is a mafic metavolcanic with 1 per cent visible sulfides.

Near the Raise Pond is a trench (3 m wide by 6 m long) excavated into waste rock . Here the waste rock seems to be development muck consisting of sulphide abundant mafic volcanics, with orange-brown colouration, and development of secondary copper oxidation minerals that show up as bright blue and green specks and patches. A sample of this finely crushed waste rock was taken and submitted for analysis to determine its acid generating potential. The sample was collected from several locations along the trench walls. Table 6.29-2 provides the analytical results. The rock sample has elevated concentrations of iron (87,000 ppm), calcium (13,800 ppm), aluminum (37,100 ppm) and is acid producing.

Runoff from precipitation and snowmelt is anticipated to flow across and through the waste rock into adjacent Phil Lake. Therefore, one point was attributed to the “Liquid Discharge” category for the Environmental Risk Scoring.

Slag has been used as ballast rock on the trackbed for the former railway line that connected the site to Flin Flon, where the ore was processed. A minor amount of slag was visible on the remnant trackbed at the southwest end of the site.

Table 6.29-1
Coronation Mine-Pit Water Quality

Parameter	Units	Result	SSWQO (1)
Total Trace Metals			
Aluminum (Al)	mg/L	0.030	
Antimony (Sb)	mg/L	0.002	
Arsenic (As)	ug/L	<0.5	0.05
Boron (B)	mg/L	0.700	
Barium (Ba)	mg/L	0.040	1
Beryllium (Be)	mg/L	<0.001	
Bismuth (Bi)	ug/L	1.000	
Cadmium (Cd)	mg/L	<0.001	0.001
Cobalt (Co)	mg/L	0.002	
Chromium (Cr)	mg/L	<0.001	0.02
Copper (Cu)	mg/L	0.066	0.01
Molybdenum (Mo)	mg/L	<0.001	
Nickel (Ni) (4)	mg/L	0.002	0.025
Phosphorous (P)	mg/L	0.010	
Lead (Pb)	mg/L	<0.002	0.02
Selenium (Se)	mg/L	0.002	0.01
Silver (Ag)	mg/L	<0.001	0.01
Tin (Sn)	mg/L	0.007	
Strontium (Sr)	mg/L	4.900	
Titanium (Ti)	mg/L	0.003	
Thallium (Th)	mg/L	<0.01	
Vanadium (V)	mg/L	<0.001	
Zinc (Zn)	mg/L	0.044	0.05
Total Major Metals			
Calcium (Ca)	mg/L	340.0	
Potassium (K)	mg/L	16.0	
Magnesium (Mg)	mg/L	120.0	
Sodium (Na)	mg/L	240.0	
Iron (Fe)	mg/L	0.047	1
Manganese (Mn)	mg/L	0.071	
Silicon (Si)	mg/L	2.5000	
Zirconium (Zr)	mg/L	<0.001	
pH	pH Units	7.9100	
Radionuclides			
Uranium (U)	n/a	n/a	0.1 to 0.2 (2)
Lead-210	n/a	n/a	
Polonium-210	n/a	n/a	
Radium-226	n/a	n/a	0.11 (3)

(1) Unless noted, the value is the Specific Surface Water Quality Objective for the Protection of Aquatic Life and Wildlife from the Surface Water Quality Objectives (August, 1997) published by SERM.

(2) For comparitive purposes, the current Municipal Drinking Water Quality Objective for Saskatchwewan (SERM, 1996) is 0.1 mg/L and the Specific Surface Water Quality Objective for Protection of water for livestock watering is 0.2 mg/L.

(3) General Surface Water Quality Objective from Surface Water Quality Objectives published by SERM (August, 1997)

(4) The Surface Water Quality Objective for Nickel is 0.025 mg/L where hardness < 100 mg/L ($CaCO_3$).
The Surface Water Quality Objective for Nickel is 0.100 mg/L where hardness < 100 mg/L ($CaCO_3$).

Table 6.29-2

Coronation Waste Rock

Parameter	Units	Result
Al2O3	%	
Iron	ppm	87,000
Fe2O3		
CaO	%	
Magnesium	%	23,700
MgO	ppm	
K2O	%	
Sodium	ppm	1,400
Na2O	%	
Calcium	ppm	13,800
Nickel	ppm	26
Lead	ppm	11
Arsenic	ppm	43
Aluminum	ppm	37,100
Gold	ppm	
Silver	ppm	1.2.
Mercury	ppm	
P2O5	%	
Zinc	ppm	330
Cadmium	ppm	2.7
Cobalt	ppm	61
Molybdenum	ppm	<0.5
Manganese	ppm	630
MnO %	%	
Chromium	ppm	44
Potassium	ppm	1,900
Vanadium	ppm	120
Boron	ppm	<1
Barium	ppm	49
Beryllium	ppm	<0.5
Copper	ppm	8,200
Titanium	ppm	670
TiO2 %	%	
Zirconium	ppm	4.1
Yttrium	ppm	
Lanthanum	ppm	
Thorium	ppm	
Strontium	ppm	26
Phosphorous ppm	ppm	250
Sulphate, Acid Soluble (%)	%	0.79
Sulphide ppm	ppm	16,200
Sulphur (%)	%	1.54
Acid Neut g $CaCO_3$/kg	g CaCO3/kg	24
Acid Producing g $CaCO_3$/kg	g CaCO3/kg	50
Net Acid Generation	g CaCO3/kg	26
pH, Paste pH units	pH units	5.86

6.29.5.4 Tailings

No tailings were observed on the site.

Two points were attributed to the “Tailings Character” category for the Environmental Risk Scoring on the premise of sulphide ore being mined at this site. Three points were attributed to the “Tailings Location” category on the basis that the tailings (if any) were deposited into Phil Lake.

6.29.5.5 Debris

Debris related to past mine activities includes the following: (1) scrap steel, cables and lumber near the loading platform; and, (2) coils of steel cable and piles of scrap lumber along the edges of the dyke. The debris does not appear to present a public safety or environmental hazard.

There are several large piles of wood slabs (scrap from the sawmill) in the centre of the site, along with junked vehicles.

6.29.5.6 Site Buildings

Six concrete slabs or foundations remain, and are situated at the west end of the site. Their location and dimensions are shown in Figure 6.29-2. Concrete foundation ‘A’ is the largest, and may have been the former mine shop building. Concrete foundation ‘B’ appears to be the power line receiving station, and has a concrete duct-like structure leading to the mine shop foundation. Electrical conduits protrude from the slab and stubs of the wooden power poles remain encased in the footings. The purpose for concrete foundation ‘C’ is not known. It is currently used for as a burning barrel location. Concrete foundation ‘D’ is reported to be the shaft and headframe. Three side-by-side openings (about 0.8 m by 1.5 m) are situated at one end of foundation ‘D’. Finely crushed rock infills the opening, with small trees growing out of the opening. Concrete foundations ‘E’ and ‘F’ likely represent buildings associated with the headframe. Foundation “E’ is currently used as a storage area by the sawmill operation. Other than the shaft opening at concrete foundation ‘D’, the rest of the remnant foundations do not pose a public safety hazard.

A derelict timber loading platform with a ramp of broken waste rock is located at the north end of the site, and appears to have been used for loading of rail cars. The former rail trackbed ran alongside the platform.

6.29.6 History of Previous Inspections

The site has been inspected on previous occasions by Saskatchewan Environment. The pit had a chain link fence erected around it in the 1980's, but the fence has since been remove.

6.29.7 Risk Assessment Ranking

Public Safety Assessment	14
Environmental Assessment	19.5
Combined Total Assessment	33.5
Ranking	1/26

Although entry to the site is restricted by the sawmill operator, there remain several public safety hazards which include: (a) open access to the Raise Pond where an accidental fall into and difficulty in climbing out, remains; (b) the shaft, where a shallow opening presents a minor trip hazard and the possibility that infilling waste rock could slump, leading to ground instability around the shaft; and, (c) the loading platform, where its derelict condition and height represent a fall hazard. Therefore, three points were attributed to the "additional public safety risks" category. Public safety risks are prevalent considering the site is easily accessible and close to populated areas.

Given that: (a) a large amount of waste rock is present on the site; (b) intensely sulphidized waste rock/development muck from which runoff may drain to the lake; (c) tailings may be on the site; and, (d) there is a potential of a hydraulic connection between the Raise Pond and the lake, a total of three points was attributed to the "additional environmental risks" category.

6.29.7 Recommended Follow-up

Follow-up activities should be directed to removing public safety hazards. The Raise Pond should be re-fenced to prevent access to the pond edge. A concrete cap should be considered for placement over the shaft which would form a permanent seal and reduce any development of instability of the infilling waste rock. The loading platform should be dismantled and the rock ramp be knocked down and spread out flat in the local area. Hazard warning placards should be posted should reclamation activity be delayed.

Other than the shaft foundation, the remaining concrete foundations can be left as is, since some of the foundation slabs remain in use by the sawmill operator for storage platforms and do not present a public safety hazard.

Further inspection and sampling of sediments in Phil Lake should be considered to determine whether tailings were ever disposed into the lake. Appropriate follow-up activities would be dependent on the results of this supplemental investigation.

Waste rock is acid producing. Consideration should be given to consolidating the waste rock into the pit and covering the remaining waste rock with organic soil and revegetation.

The moderate amount of debris (scrap lumber and steel, cables, and rail ties) left over from mining operations and site reclamation could be considered for clean-up and removal for appropriate disposal.

Photograph 6.29-1. Coronation Mine-Aerial View-October 23, 2002.

Photograph 6.29-2. Coronation Mine-Panoramic View of Raise Pond Looking Southwest-October 28, 2002.

Photograph 6.29-3. Coronation Mine-Concrete Foundation 'A' (Mine Shop?)-October 28, 2002.

Photograph 6.29-4. Coronation Mine-Concrete Slab and Footings-October 28, 2002.

Photograph 6.29-5. Coronation Mine-Concrete Slab 'C'-October 28, 2002.

Photograph 6.29-6. Coronation Mine-Concrete Foundation 'D' (Shaft Area)-October 28, 2002.

Photograph 6.29-7. Coronation Mine-Concrete Foundation 'E'-October 28, 2002.

Photograph 6.29-8. Coronation Mine-Loading Platform-October 28, 2002.

Photograph 6.29-9. Coronation Mine-Remnant Railway Trackbed-October 28, 2002.

6.30 Wekatch Gold Mines

6.30.1 Location and Access

Site Inspection: 28 October 2002

Location: NTS Map Sheet 63K/12
UTM Zone: 14U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 42' 15" lat 101° 56' 40" long	6065637 m N 310286 m E	6065711m N 310180 m N

* Location recorded by GPS during Year 3 field program
** Locations obtained from Saskatchewan Mineral Deposit Index

The site is located 6 km southwest of the Town of Creighton, on the west shore of Wekach Lake where the narrows separate Becker Bay (to the north) from the main portion of the lake (to the south). Access can be gained by driving 2.3 km on a private road (beginning from Highway 167) to a residence at the north end of Becker Bay, and then by boat to the site.

The site location is shown in Figure 6.30.1. The site plan is shown in Figure 6.30-2. Photograph Nos. 6.30-1 to 6.30-3 show the site.

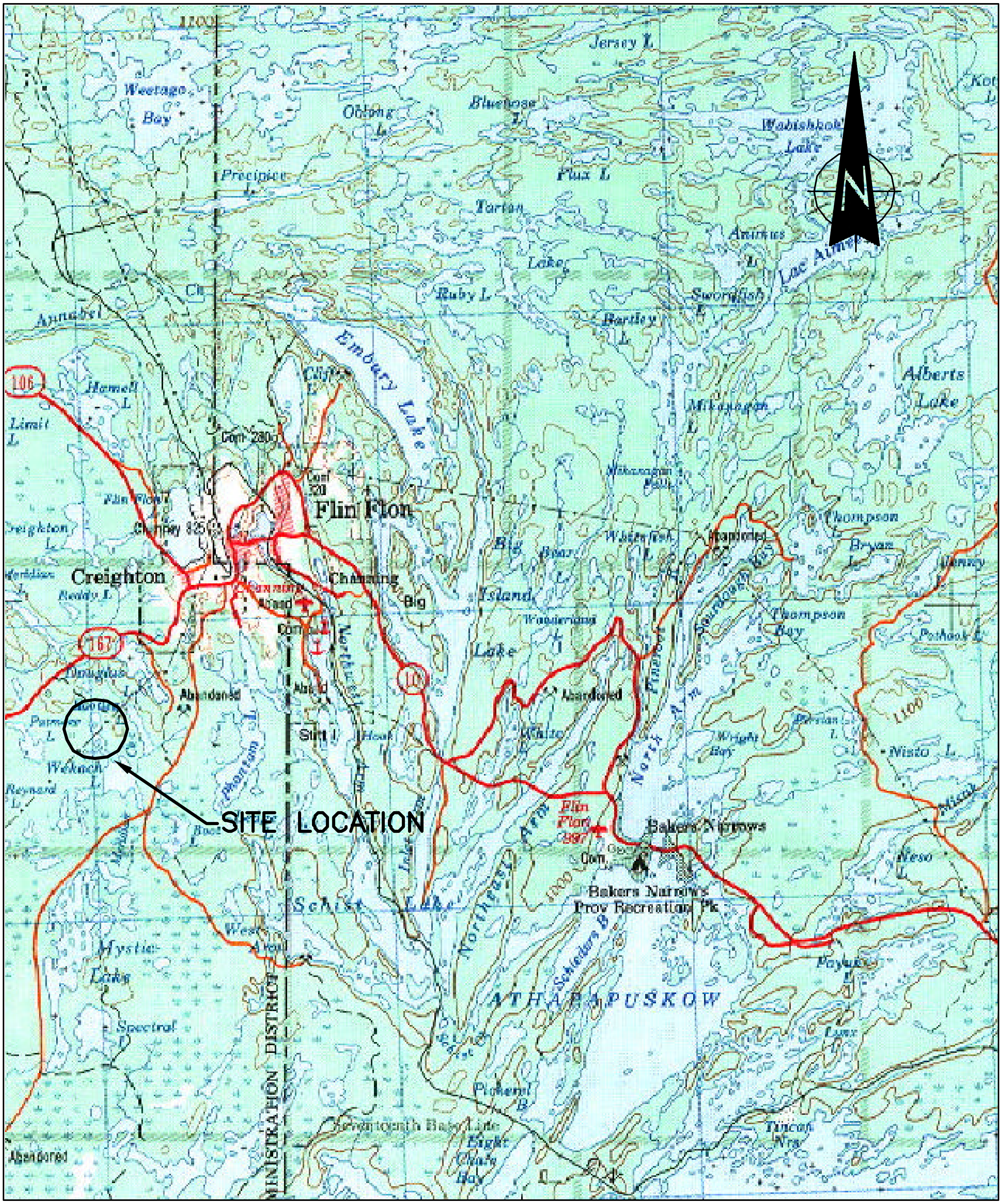
6.30.2 Property Information and Ownership

Saskatchewan Mineral Deposit Index Number: 0021
Property: (formerly: KAG claim No. 9; CABIN claims)
Location: Wekach Lake – west of
Owner(s): Open – see Section 6.30.4 for previous owners
Commodity: Au **Associated Commodities:** Cu; An
Deposit Type: Adit or Shaft

6.30.3 Geology

The showing consists of gold mineralization noted in a 305 by 15 m (1000 by 50 ft) shear zone.

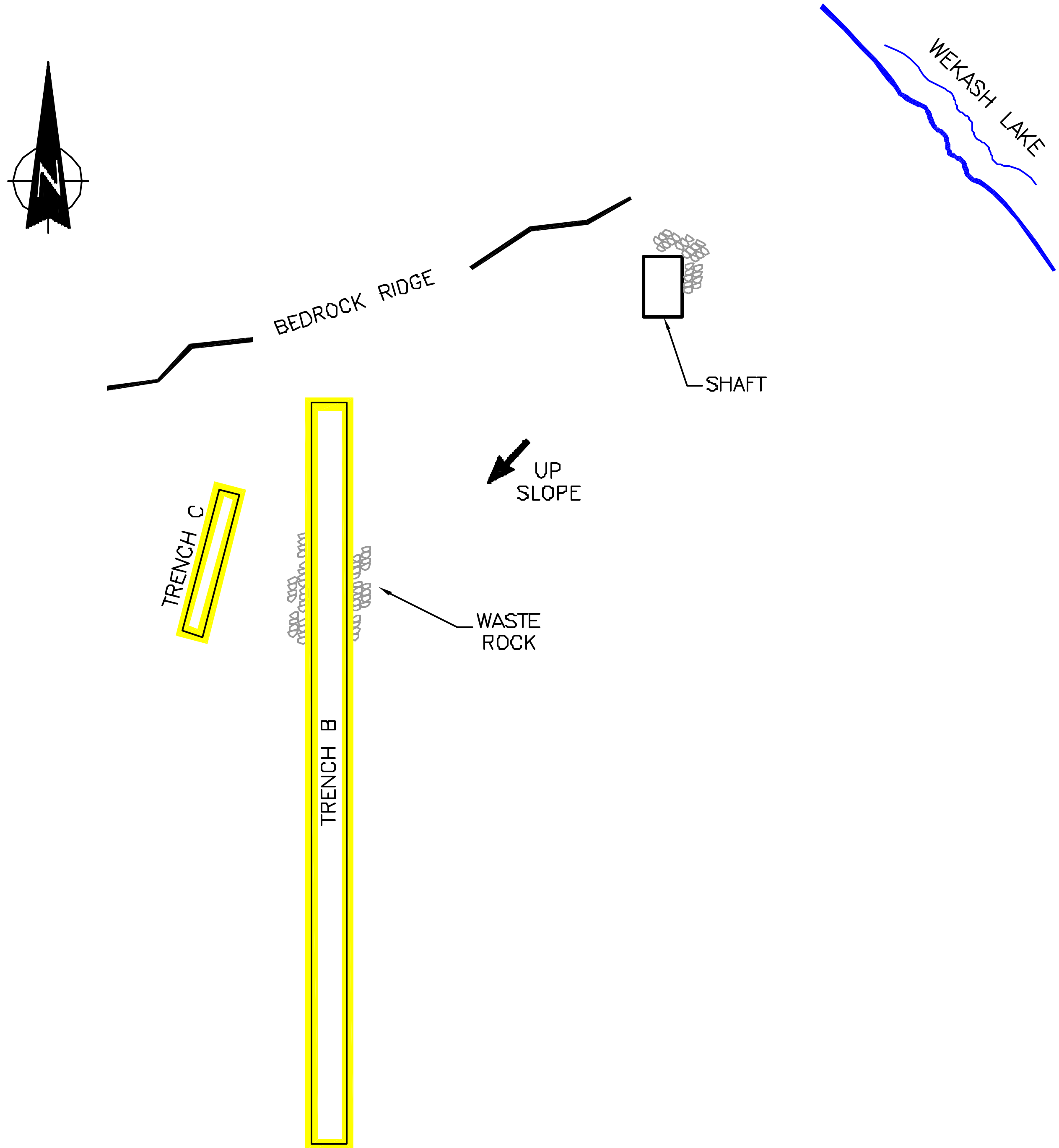
The shear zone occurs in basic volcanics of Amisk Group which are cut by a large body of diorite or metagabbro. The main vein (No. 2) contained several high gold assays over 2.1 to 5.5 m (7 to 18 ft). Another well-mineralized vein was located northwest of the main vein.



NOTE:
DRAWING DEVELOPED FROM
SCANNED NTS MAP 63 K.

SITE LOCATION PLAN
WEKACH GOLD MINE

CLIFTON ASSOCIATES LTD. | PROJECT NO: R3278 | FIGURE NO: 6.30-1



LEGEND:

Roads/Trails	
Mine Workings	
Waste Rock	
Body of Water	
Scrap Material/Debris/Refuse	
Building/Foundation	
Tailings	
Natural Ground Surface	
Gamma Readings (µSv/hr.)	0.25
Water Sample Location	
Soil Sample Location	

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

WEKATCH GOLD MINE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.30–2**

A gold showing was noted to occur just to the west of the central channel of Wekach Lake a few hundred feet or less, to the west of the volcanic-intrusive contact.

In 1983, Kenergy Resource Corporation examined the surface portion of the Wekack Lake Gold Mines shaft. The shaft was sunk in a shear that is located at the contact between diorite and altered intermediate tuff. The mine horizon is an intensely sheared chlorite schist that contains a stockwork of stringers and veins of quartz, ankerite and quartz-calcite-chlorite. The vein strikes 098° and dips vertically. The individual veins and stringers are quite discontinuous and range from 1 to 75 cm in width. The veins pinch and swell in a down-dip direction. Two of the larger veins appear to be zoned.

The mineralized horizon, which is felt to be an extension of the Rio Zone, is contained within a shear that strikes 106° and dips 72° NE. The mineralized quartz veins, which are drag folded and sheared, partially predate the faulting. The main quartz vein is folded by a doubly plunging refolded fold. The zone footwall is a brecciated, sheared intermediate volcanic flow.

Chip sampling of the zone produced values that ranged up to 3,690 ppb Au.

6.30.4 Exploration History

Gold was first discovered in the Wekach Lake area and staked by prospectors in 1914. Some trenching and stripping done at that time disclosed several gold-bearing quartz veins. During the 1934 to 1935 period Wekach Lake Gold Mines Ltd. completed stripping, trenching, and dug a 6 m (20 ft) prospect shaft in quartz veins varying in width from 0.7 to 15 m (2 to 50 ft). The main vein encountered high local gold values over a few feet. Another well mineralized vein 1.5 m (5 ft) wide was discovered northwest of the main vein. Between 1951 and 1953, G.F. Thompson completed four trenches on the showing. The showing was now covered by the CABIN claims. By 1981, the showing was within KAG claim No. 9. In 1981, Kenergy Resources Corporation completed prospecting on KAG claims No. 1 to 7 and CBS 3510. They could not locate the old mine shaft. In 1983, Kenergy located the shaft on KAG claim No. 9. Kenergy completed ground VLF-EM, HLEM and magnetic surveys in the shaft area and detail geologically mapped and chip sampled the west face of the shaft and a nearby trench.

6.30.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.30.5.1 General

The Wekatch Gold Mines site was inspected on 28 October 2002. Due to Wakach Lake being entirely frozen, which prevented boat passage, access to the site was achieved by walking 1.5 km along the shoreline ice starting from the north end of Becker Bay. At the site there was a 10 cm thick snow cover over the entire ground surface.

The site is located along a steep bedrock ridge beside the lake. The shaft and associated waste rock pile is situated 10 m from the shore, is readily visible and easy to locate. The trenches are further uphill, but not visible. There was no evidence of recent visitation. Forest vegetation was of moderate density, a mix of spruce, pine, birch, poplar and scrub. Vegetation growth around the shaft opening was minor.

6.30.5.2 Mine Workings

The site workings are exposed over a length of 225 m, and consist of a prospect shaft and two shallow trenches.

The shaft opening is 1.5 m by 2.1 m, and is about 4 m above the lake. The measured maximum depth of the shaft was 3.9 m, with a leaf-filled soft bottom. Water, to a depth of 0.6 m, had accumulated at the shaft bottom and had a rotten vegetation odour. The frozen water surface was 3.3 m below the shaft lip, and is estimated to be 0.6 m above the lake level. The accumulated water appears to be the result of precipitation, and although there may be some hydraulic connection to the lake through rock fractures and joints, the general unmineralized nature of the rock likely limits environmental impact to surface waters. The shaft walls were stable with no noticeable loose rock at the edges.

Trench ‘B’ is a 30 m long rock trench, 1.2 m wide, and variable in depth from 0.6 m to 1.5 m. The trench is heavily ingrown with conifer, birch (up to 12-cm diameter) and scrub brush. Trench ‘C’ is 6 m long, 0.6 m wide and 0.3 m deep.

The flooded prospect shaft presents a fall-in hazard to people and large wildlife. The shallow trenches are not a public safety hazard.

6.30.5.3 Waste Rock

A small amount of coarse waste rock is located on the bedrock slope beside the prospect shaft, covering an area of about 3 m by 3 m. The estimated volume is 12 m^3, based on the size of the shaft excavation. The waste rock slope is stable, with several small trees growing on top. The waste rock is a chlorite schist with some quartz veining.

Minor amounts of waste rock were observed alongside Trench ‘B’. Trees and brush are common along the trench edge.

The small waste rock piles do not appear to present a public safety or environmental hazard.

6.30.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.30.5.5 Debris

No debris was observed.

6.30.5.6 Site Buildings

No buildings or ruins were observed.

6.30.6 History of Previous Inspections

No record of previous inspections was located.

6.30.7 Risk Assessment Ranking

Public Safety Assessment	10
Environmental Assessment	4
Combined Total Assessment	14
Ranking	15/26

The site is readily visible from the lake and the open prospect shaft is easily accessible, thus increasing the chances of the fall-in hazard. Steep walls would prevent easy escape. Furthermore, the site is locally known. Therefore, two points were attributed to the "additional public safety risks" category.

6.30.8 Recommended Follow-up

Follow-up activities should focus on sealing the prospect shaft since it poses a public safety risk due to its easy accessibility. The shaft should be secured with a concrete cap or filled-in with local unmineralized waste rock. The shallow trenches can be left in their current condition.

Photograph 6.30-1. Wekatch Gold Mines-Shaft Beside Wekatch Lake-October 28, 2002.

Photograph 6.30-2. Wekatch Gold Mines-Shaft-October 28, 2002

Photograph 6.30-3. Wekatch Gold Mines-Trench 'B'-October 28, 2002

6.31 CAM Option Cu Showing

6.31.1 Location and Access

Site Inspection: 29 October 2002

Location: NTS Map Sheet 63 L/16
UTM Zone: 13U

NAD 83		NAD 27
Geographic**	UTM**	UTM*
54° 52' 32" lat 102° 08' 45" long	6084460 m N 683122m E	Trench No. 7 6084378 m N 683074 m E

* Location recorded by GPS during Year 3 field program
** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located 565 m south of the Tyrrell Lake Provincial Recreation Site. The nearest workings are found 80 m west of the public access road to the recreation site. The Town of Creighton and the City of Flin Flon are located 21 km southeast of the site. Highway 106 is located 2 m south of the site

The site location is shown in Figure 6.31-1. The site plan is shown in Figure 6.31-2. Photograph Nos. 6.31-1 to 6.31-3 show the site.

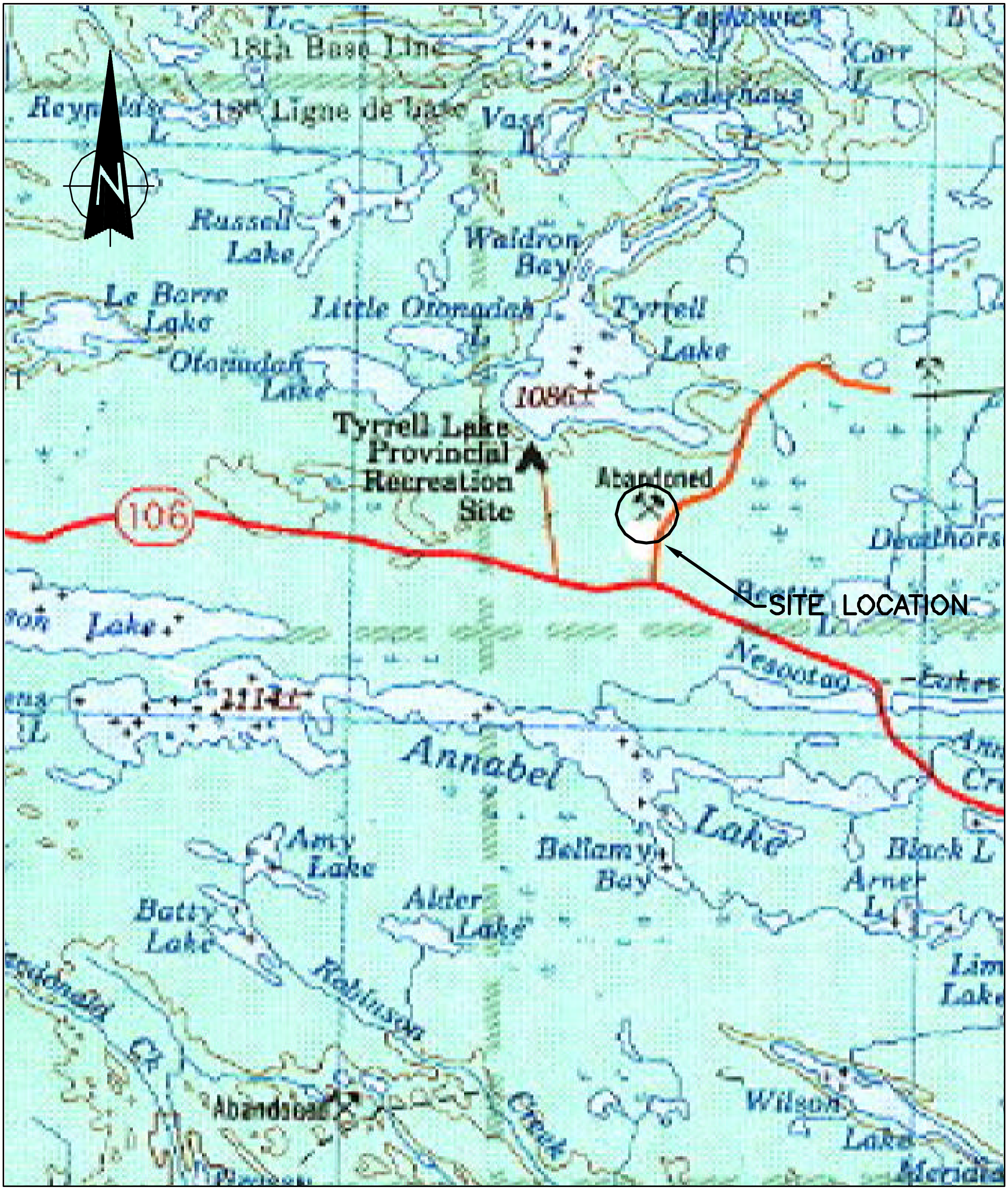
6.31.2 Property Information and Ownership

Property: (formerly: CBS 755 and CAM claim Nos. 1 to 3)
Saskatchewan Mineral Deposit Index Number: 0302
Location: Tyrrell Lake – south of
Owner(s): Open – see Section 6.31.4 for previous owners
Commodity: Cu **Associated Commodities:** Zn; Py
Deposit Type: Trench

6.31.3 Geology

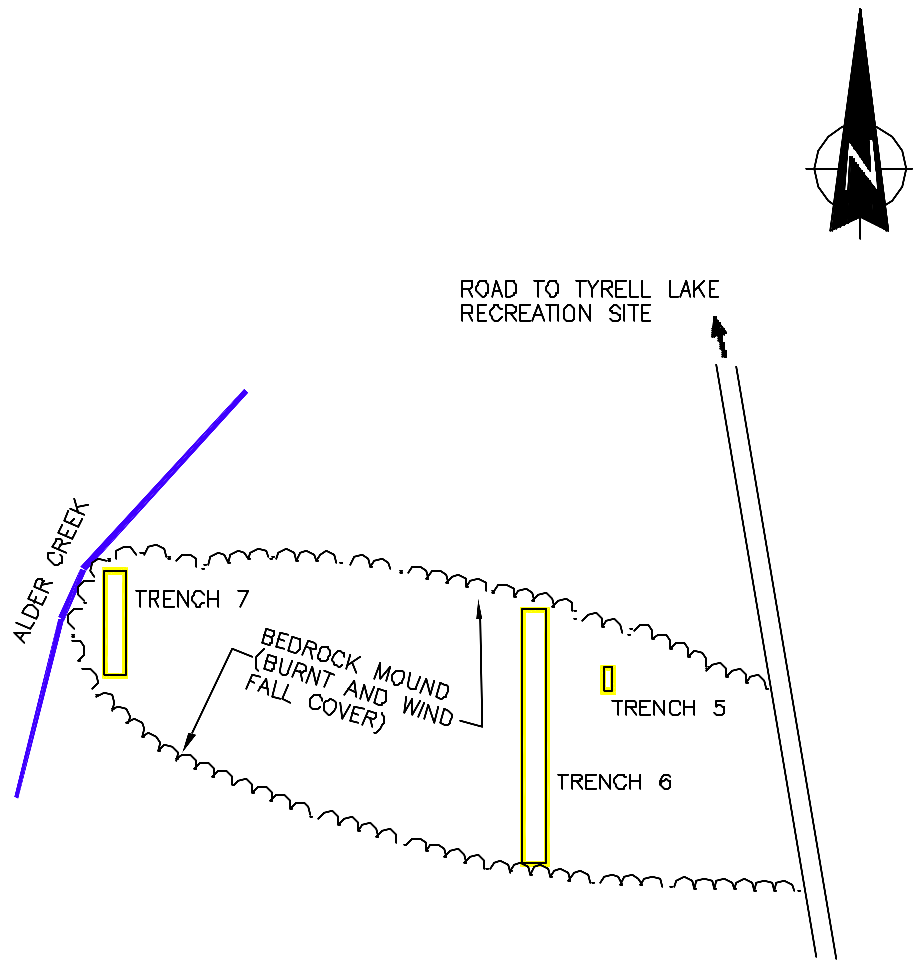
The showing was originally exposed in 7 trenches over a strike length of 701 m (2,300 ft). The showing is located about 564 m (1,850 ft) south of Tyrell Lake.

The bedrock is biotite-garnet gneiss of the Kisseynew Group. The showing is located immediately north of the contact between unit 9b or biotite-garnet gneiss and unit 14b or



SITE LOCATION PLAN
CAM OPTION CU SHOWING

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.31–1



DIMENSIONS:
TRENCH 7 – 35'L X 7'W X 6'D
TRENCH 6 – 85'L X 8'D
TRENCH 5 – 8'L X 3'W X 3'D

LEGEND:

Roads/Trails
Mine Workings
Waste Rock
Body of Water
Scrap Material/Debris/Refuse
Building/Foundation
Tailings
Natural Ground Surface
Gamma Readings (µSv/hr.) 0.25
Water Sample Location
Soil Sample Location

LEGEND:

LOCATION OF ALL FACILITIES ARE APPROXIMATE AND SHOULD BE USED AS AN INDICATION OF PRESENCE ONLY.

TYRELL LAKE SITE – SITE PLAN
(NOT TO SCALE – DIMENSIONS ARE APPROXIMATE)

CLIFTON ASSOCIATES LTD. **PROJECT NO: R3278** **FIGURE NO: 6.31–2**

hornblende granodiorite. Byers and Dahlstrom interpret these gneisses to be the metamorphic equivalent of sandstone, greywacke, and thinly interbedded sandstones and quartzose shales. During later mapping, K. Ashton concluded that these locally graphitic gneisses were metamorphosed greywackes.

Starting at the east end the first five trenches are caved. All but the first trench have fragments of massive pyrrhotite on the dumps. The sixth trench is 18.3 m (60 ft) long and exposes a zone of nearly massive pyrrhotite over a width of 6.1 m (20 ft). The west trench is also caved, and massive pyrrhotite occurs on the dump. It is reported that some chalcopyrite and sphalerite are present in the pyrrhotite, but no assays are available.

The east-west trending, showing mineralization, has been exposed over a strike length of 700 m across a width of up to 7 m.

6.31.4 Exploration History

In 1932, H.L. Patton completed seven trenches and three shallow drill holes on the showing.

The showing was relocated by A.R. Byers and C.D.A. Dahlstrom who mapped the area for the Saskatchewan Geological Survey in 1954.

The showing was investigated for the survey in 1959 by L.S. Beck.

In 1964, A. R. Murray completed trenching on the CAM claim Nos. 1 and 2.

In 1965, Hudson Bay Exploration and Development completed a ground EM survey over the CAM claims.

By 1966, the showing was within CBS 755. Hudson Bay Exploration and Development completed ground EM surveys over the showing area. Hudson Bay termed this showing the Cam Option. Between 1966 and 1967, Hudson Bay completed drill hole CAM-01 on CAM claim No. 2 to test the showing conductor. No record of this drill hole can be found in the assessment files.

6.31.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.31.5.1 General

The CAM Option Cu Showing (also referred to as the Tyrrell Lake site) was inspected on 29 October 2002. Access to the site was gained by walking 80 m west from the Tyrrell Lake Recreation Site road, from a point 650 m south of the recreational site's public dock. A 13-cm thick snow blanket covered the entire ground surface.

The site is situated on a low broad mound. A forest fire in the area south of Otonadah and Tyrrell Lakes (including the site) during the mid to late 1990s, has left an extensively burnt and windfall forest. Jack pine and poplar tree regrowth is present in areas. Passage through the area is difficult. There was no evidence of recent visitation, but what appears to be an ATV / snowmobile trail passes near the workings.

6.31.5.2 Mine Workings

The site workings are exposed over a length of 170 m, and consist of one short and two long shallow trenches. The five caved trenches, as reported in the SMDI inventory, were not visible.

Trench No. 7 (named assigned in this investigation) in situated at the west end of the mound adjacent to an alder "valley". Features described in the SMDI inventory appear to match the description of the "west trench". The trench is 10.6 m long, 2.1 m wide, and 1.8 m deep. Gossan rock, intense sulphide mineralization and friable rock were visible on the trench walls and appeared to be stable. Several immature birch trees (less than 3-cm diameter) have grown at one end of the trench.

Trench No. 6 (assigned name) appears to match the description of the "sixth trench' described in the SMDI inventory. The trench is about 26 m long, varies in width from 1.2 m to 2.4 m and is generally 1.2 m deep. At the south end is a pit-like opening, 2.4 m wide and 2.1 m deep into which water had pooled. The accumulated water was frozen, and had a depth of 0.6 m. Many dead and burnt trees have fallen over the top of the trench, partially obscuring it. Birch brush and immature pines have regrown along the length of the trench.

Trench No. 5 (assigned name) is the smallest working. It is 2.4 m long, 1 m wide and 1 m deep.

Trench No. 6 and No. 7 present a winter hazard to snowmobile travel, if crossed. In summer, the public safety risk is minimal.

6.31.5.3 Waste Rock

Coarse waste rock has been piled along the edges of the trenches. The largest accumulation is at Trench No.7 and includes pieces of massive pyrrhotite. The volume of waste rock is estimated to be about 42 m^3, based on the size of the excavation. Footing can be difficult on the waste rock.

Waste rock at Trench No. 6 appears to have been spread out further away from the trench edges. Windfall trees have fallen on top of, and birch brush also covers the waste rock.

Overall, the low sloped waste rock piles do not appear to present a public or environmental safety hazard.

6.31.5.4 Tailings

No tailings were observed. Furthermore, the workings at the site were of a prospecting nature and no mill is known to have been constructed which would have resulted in tailings being produced.

6.31.5.5 Debris

No debris was observed.

6.31.5.6 Site Buildings

No buildings or ruins were observed.

6.31.6 History of Previous Inspections

No record of previous inspection was located.

6.31.7 Risk Assessment Ranking

Public Safety Assessment	9
Environmental Assessment	3.5
Combined Total Assessment	12.5
Ranking	17/26

The site is in the proximity of a provincial recreational site, thereby increasing the likelihood of tourist activity (either by walking or recreational vehicle) visiting the site. Furthermore, the site is located near an ATV / snowmobile trail, thus increasing the chance that recreational off-road vehicles could accidentally fall into the trenches should they be obscured by snow. Thus, one point were attributed to the "additional public safety risks" category.

6.31.8 Recommended Follow-up

Consideration should be given to infilling the trenches since they could pose a public safety risk to users of ATVs and snowmobiles. Waste rock at the trench edges could be back-filled into the trench by bulldozer.

Photograph 6.31-1. CAM Option Copper Showing-Aerial View-October 23, 2002

Photograph 6.31-2. CAM Option Copper Showing-Trench No. 6-October 29, 2002.

Photograph 6.31-3. CAM Option Copper Showing-Trench No. 7-October 29, 2002.

6.32 Otonadah Lake Copper Showing and Exploration Shaft

6.32.2 Location and Access

Site Inspection: 23 and 29 October 2002

Location: NTS Map Sheet 63 L/16
UTM Zone: 13U

NAD 27	
Geographic**	UTM**
54° 53’ 04” lat 102° 11’ 55” long	6085312 m N 679689 m E

** Locations obtained from the Saskatchewan Mineral Deposit Index

The site is located about 400 m south of Otonadah Lake, 3.5 km west of the Tyrrell Lake Provincial Recreation site and 2 km north of Highway 106. The Town of Creighton and the City of Flin Flon are located 25 km southeast of the site.

Site access may be possible by float plane landing on the south shore of Otonadah Lake and walking to the site. Local inhabitants report that logging roads off Highway 106 approach to within about 1 km of the site.

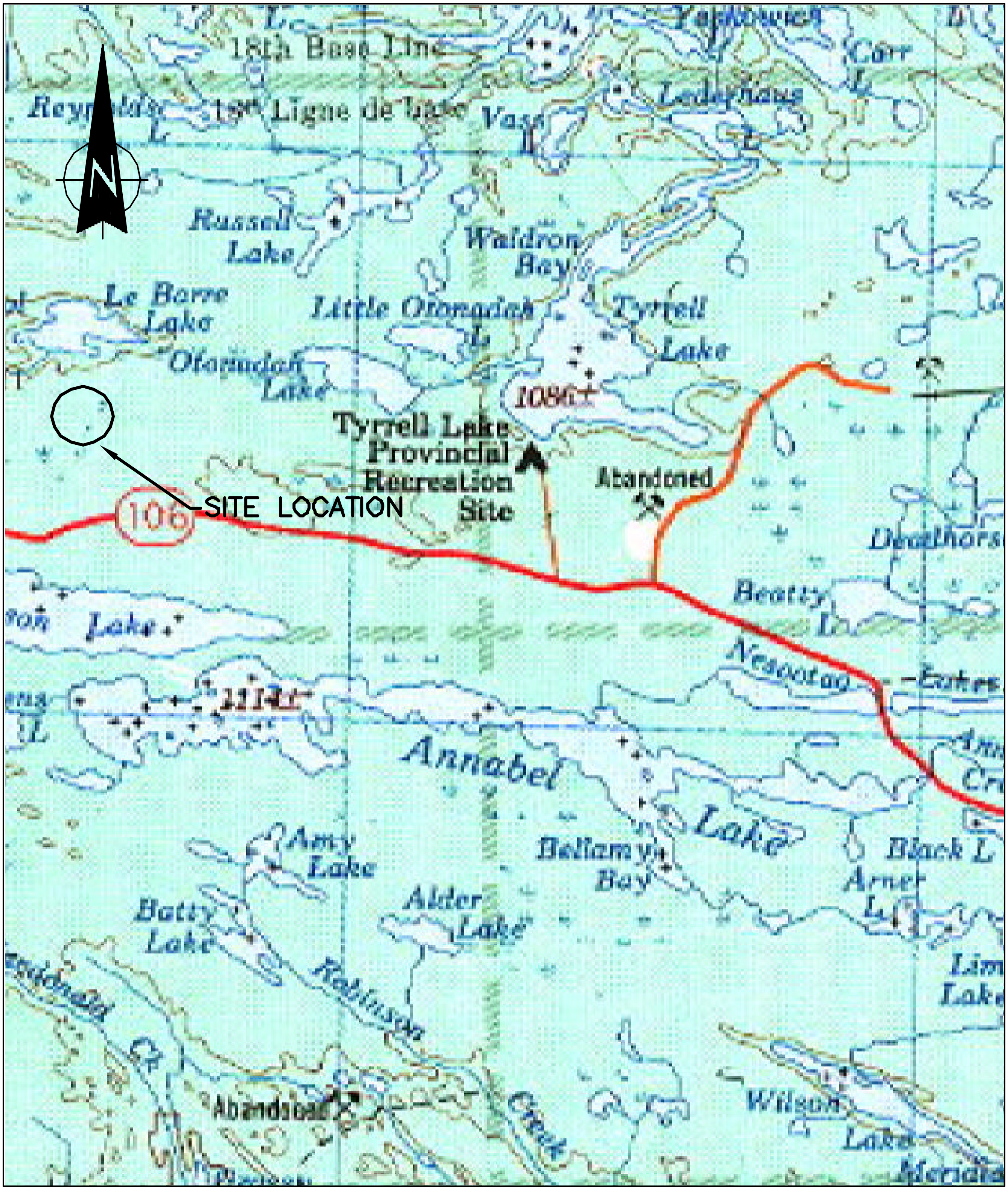
The site location is shown in Figure 6.32-1. Photograph No. 6.32-1 is an aerial view of the site area.

6.32.2 Property Information and Ownership

Property: S-99644 (formerly: CBS 3735; CBS 755; GOOD claims; BIRCH claims)
Saskatchewan Mineral Deposit Index Number: 0302
Location: Otonadah Lake – south of
Owner(s): Open – see Section 6.32.4 for previous owners
Commodity: Cu **Associated Commodities:** Au; Py; Po
Deposit Type: Adit or Shaft

6.32.3 Geology

The showing was originally exposed in 7 trenches over a strike length of 701 m (2,300 ft). The showing is located about 564 m (1,850 ft) south of Tyrell Lake.



SITE LOCATION PLAN
OTONADAH LAKE COPPER SHOWING ABD EXPLORATION SHAFT

CLIFTON ASSOCIATES LTD. PROJECT NO: R3278 FIGURE NO: 6.32–1

The bedrock is biotite-garnet gneiss of the Kisseynew Group. The showing is located immediately north of the contact between unit 9b or biotite-garnet gneiss and unit 14b or hornblende granodiorite. Byers and Dahlstrom interpret these gneisses to be the metamorphic equivalent of sandstone, greywacke, and thinly interbedded sandstones and quartzose shales. During later mapping, K. Ashton concluded that these locally graphitic gneisses were metamorphosed greywackes.

Starting at the east end the first five trenches are caved. All but the first trench have fragments of massive pyrrhotite on the dumps. The sixth trench is 18.3 m (60 ft) long and exposes a zone of nearly massive pyrrhotite over a width of 6.1 m (20 ft). The west trench is also caved, and massive pyrrhotite occurs on the dump. It is reported that some chalcopyrite and sphalerite are present in the pyrrhotite, but no assays are available.

The east-west trending showing mineralization has been exposed over a strike length of 700 m across a width of up to 7 m.

6.32.4 Exploration History

In 1932, H.L. Patton completed seven trenches and three shallow drill holes on the showing.

The showing was re-located by A.R. Byers and C.D.A. Dahlstrom who mapped the area for the Saskatchewan Geological Survey in 1954.

The showing was investigated for the survey in 1959 by L.S. Beck.

In 1964, A.R. Murray completed trenching on the CAM claims No. 1 and 2.

In 1965, Hudson Bay Exploration and Development completed a ground EM survey over the CAM claims.

By 1966, the showing was within CBS 755. Hudson Bay Exploration and Development completed ground EM surveys over the showing area. Hudson Bay termed this showing the Cam Option. Between 1966 and 1967, Hudson Bay completed drill hole CAM-1 on CAM claim No. 2 to test the showing conductor. No record of this drill hole can be found in the assessment files.

6.32.5 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.32.5.1 General

The Otonadah Lake Cu Showing and Exploration Shaft site was over flown by light aircraft on 23 October 2002. An aerial inspection was made. The site is on the south edge of a low-rising ridge. No surface water bodies were visible within the immediate area of the site.

A forest fire in the area south of Otonadah and Tyrrell Lakes (including the site) during the mid to late 1990's has left an extensively burnt and windfall forest. Thick spruce regrowth is present in areas.

On 29 October 2002, an attempt was made to drive to the site on old logging roads. The road ended about 1 km south of the site, but extensive burnt windfall and 10-cm snow cover made walking progress very slow and treacherous, so the attempt was ended. Follow-up work could include another attempt to work into the site if conditions are considered safe or attempting to land at the site by helicopter.

6.32.5.2 Mine Workings

Two long and deep trenches were visible from the air. According to the SMDI inventory, a shaft was sunk on the property, but it was not observed during the over flight. The deep trenches could present a fall-in hazard to people and large animals.

6.32.5.3 Waste Rock

Waste rock piles were not observed during the aerial inspection.

6.32.5.4 Tailings

No tailings impoundment areas were observed during the aerial inspection.

6.32.5.5 Debris

Debris could not be observed during the aerial inspection.

6.32.5.6 Site Buildings

No buildings or ruins were observed during the aerial inspection.

6.32.6 History of Previous Inspections

No record of previous inspections was located.

6.32.7 Risk Assessment Ranking

Public Safety Assessment	7
Environmental Assessment	1
Combined Total Assessment	8
Ranking	24/26

The risk assessment ranking was based on observations made during the aerial inspection. Due to the remoteness of the site and windfall that makes ground passage difficult, the likelihood that the site will be visited by casual visitors is low. Anecdotal information suggests that local trappers travel through the site area by snowmobile. Therefore, one point was attributed to the "public safety risks" category due to presence of deep trenches and a shaft that may be obscured by snow.

6.32.7 Recommended Follow-up

The primary follow-up work should be a further attempt to locate the reported 28 m deep shaft and examine the large trenches to determine if there are conditions that pose a public safety and/or environmental hazard.

Photograph 6.32-1. Otonadah Lake Copper Showing-Aerial View-October 23, 2002.

6.33 HBMS Flux Pit

6.33.1 Location and Access

Site Inspection: 29 October 2002

Location: NTS Map Sheet 63 L/16
UTM Zone: 13U

NAD 27
UTM*
6085932 m N 689315 m E

* Location recorded by GPS during Year 3 field program, at loading dock

The site is located 6 km east of the Tyrrell Lake Provincial Recreation Site, at the end of the abandoned HBMS rail line that ran from the site to the HBMS smelter in Flin Flon. The Town of Creighton and the City of Flin Flon are located 18 km southeast of the site. Highway 106 approaches within 5 km south of the site.

Site access can be gained by driving 3.9 km on the HBMS sand pit road (beginning from Highway 106) and then walking or using ATV/snowmobile for the remaining 3 km to the site.

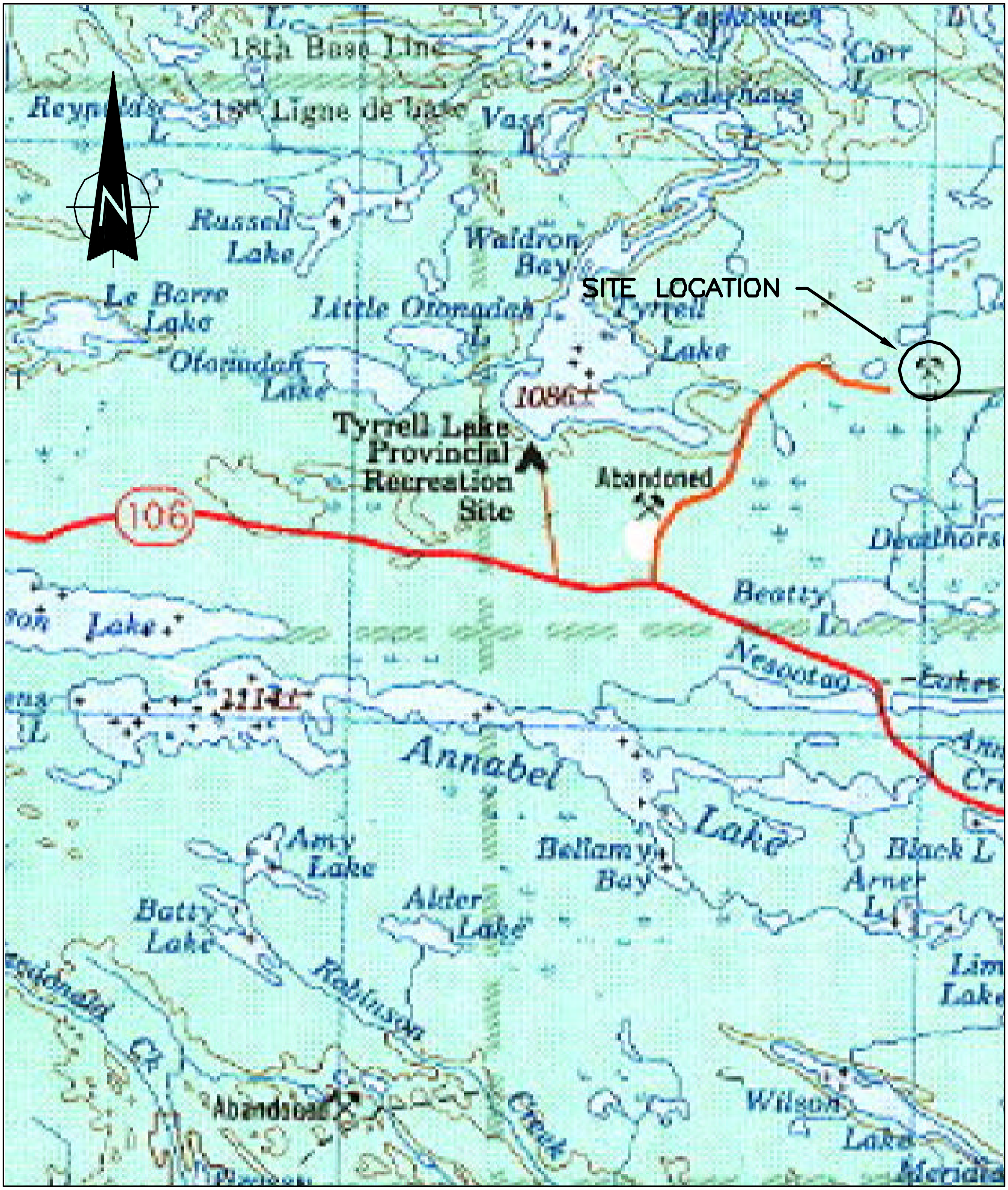
The site location is shown in Figure 6.33-1. Photograph Nos. 6.33-1 to 6.33-3 show the site.

6.33.2 Property Information and Ownership

The HBMS Flux Pit site is not registered in the SMDI inventory. The name "HBMS Flux Pit" appears to be an informal name. Ownership of the site was not determined.

According to a retired HBMS employee the site supplied sand flux to the HBMS smelter in Flin Flon. A big drag-line was used to excavate the sand, which was then loaded onto rail cars for transport to the smelter via the HBMS-owned 17 km long rail line to Flin Flon. Topographic maps (dated 1965 and 1971) show that the sand was excavated along the northwest and southeast sides of an 8 m high ridge. Three buildings are noted on the maps.

The sand pit was closed in the mid 1960s when the Hanson Lake Road (Highway 106) was built. A new sand pit was established southeast of Tyrell Lake, just off Highway 106, and which continues to remain in operation. Subsequently, the HMBS rail line was abandoned and the track was removed. From the air, it appears that the former rail bed is in use as a



SITE LOCATION PLAN
HBMS FLUX PIT

CLIFTON ASSOCIATES LTD. | PROJECT NO: R3278 | FIGURE NO: 6.33–1 road. According to the retiree, the buildings (office, lunchroom) were demolished and burned by HBMS a few years ago.

6.33.3 2002 Inspection-Site Description

Following is the site description as noted during the 2002 inspection.

6.33.3.1 General

The HBMS Flux Pit site was inspected on 29 October 2002. Access to the site was achieved by driving 3.9 km on the HBMS sand pit road to a creek where the road is blocked by boulders to prevent further vehicle traffic. The remaining 3 km of road was walked to the site. Recent visitation to the area is evident and on-going for trapping and hunting. ATV and snowmobile tracks were observed on the road, and people were met on the access road on the day of the site inspection.

The site is at the margins of a broad flat sandy plain abutting against an 8 m high flat-topped sand hill. The hill is forested with jack pine. Young birch (3 m to 5 m high) and scrub bush has overgrown much of the sandy plain where mining occurred. A relatively recent forest fire has burned through the area. A 13-cm thick snow blanket covered the entire ground surface.

The HBMS sand pit road crosses the site and continues southeastward where it merges onto the old abandoned rail line trackbed. Other smaller roads branch off the main road in the area of the site.

6.33.3.2 Mine Workings

No open workings were observed. It appears that the site has been reclaimed.

An angular shaped pond is situated at the southeast end of the site. The shape of the pond suggests it is the result of excavation, possibly as a sump for sand-mining operations.

Near the west end of the site, crossing the HBMS access road, is a long rock trench that, according to the retiree, was used as a drainage channel to dewater the sand pit.

At the southwest end of the site is a clearing and a loading pad. It appears that the pad is situated at the end of the former rail line.

No public safety hazards were observed.

6.33.3.3 Waste Rock / Tailings

Since the site was a sand pit, no waste rock or tailings were generated.

6.33.3.4 Debris

A minor amount of debris was observed and included: a length of bent steel rail (railroad track), some scrap lumber, and 15 railway crossties. The crossties appear to be what remains of a length of rail track near the loading pad. The debris does not appear to present a public safety or environmental hazard.

According to the retiree, the drag-line was buried onsite, north of the angular shaped pond, when the sand pit was closed.

6.33.3.5 Site Buildings

No buildings or ruins were observed. A wood timber retaining wall remains in place at the loading pad. The wall is about 30 m long and 1.5 m high. The pad is comprised of sand and fine-gravel.

6.33.4 History of Previous Inspections

No record of previous inspections was located.

6.33.7 Risk Assessment Ranking

Public Safety Assessment	3.5
Environmental Assessment	4
Combined Total Assessment	7.5
Ranking	N/A (see explanation below)

Given the possible presence of contaminants associated with historical operation, one additional point was attributed to the “ additional environmental risks” category.

The HBMS Flux Pit site was not ranked against the other sites, since the Flux Pit was a sand pit.

6.33.8 Recommended Follow-up

The site does not pose a public safety risk. Consideration should be given to determining whether a drag-line was buried on site, and whether it poses an environmental risk.

Photograph 6.33-1. HBM & S Flux Pit-Aerial View-October 23, 2002.

Photograph 6.33-2. HBM & S Flux Pit-Wood Timber Retaining Wall at Loading Pad-October 29, 2002.

Photograph 6.33-3. HBM & S Flux Pit-Panoramic View From Loading Pad Looking Northeast-October 29, 2002.

7.0 Follow up Work

7.1 General

This section discusses the follow-up activities suggested for future assessment work in the Uranium City, Creighton and La Ronge regions.

7.2 Uranium City Region

No additional follow-up assessment work for the Uranium City Region is recommended.

7.3 La Ronge Region

The Pitching Lake site was inspected in Year 2. The adit was decommissioned in 1990 by Saskatchewan Environment by securing a steel grate to the opening. The adit could not be located in Year 2. Year 3 inspection suggests the adit has been sealed.

7.4 Creighton Region

Although attempts were made to locate all major features at all sites in the Creighton Region listed in Section 6.0, some additional work is suggested.

Table 7.1 provides a list of sites that should have additional work completed in the future in order to complete the assessments.

Following is a description of the follow up work in the Creighton Region.

Table 7.1
Additional Assessment of Sites in the Creighton Region

Site	Status
Amisk (Beaver) Gold Mines	• Check presence/status of adit. • Site was ground inspected in Year 3.
Phantom Lake Mine	• Check presence/status of adit. • Site was ground inspected in Year 3.
Otonadah Lake Copper Showing and Exploration Shaft	• Complete ground visit to site and check presence/status of shaft. • Site aerial inspected in Year 3.

Amisk (Beaver) Gold Mines

The Amisk (Beaver) Gold Mines site is located at the northwest end of Amisk Lake, and is recorded as being within 200 m of a summer cabin. The SMDI inventory reports a 35 m adit was completed between 1932 and 1936. Ground inspection during the Year 3 program did not locate the adit. Therefore, additional work should focus on attempting to locate and assess the adit.

Phantom Lake Mine

The Phantom Lake Mine is located near the southwest end of Phantom Lake. The SMDI inventory reports a 12 m shaft was sunk in 1960. Ground inspection during the Year 3 program did not locate the shaft. Therefore, additional work should focus on attempting to locate and assess the shaft, should it still exist and not have been in-filled.

Otonadah Lake Copper Showing and Exploration Shaft

An overflight (during the Year 3 program) of the site revealed two large trenches on the south side of a broad outcrop ridge situated about 400m south of Otonadah Lake. Several years ago the area was burned by a forest fire, resulting in heavy deadfall that makes for slow and dangerous walking. A ground inspection of the site should be completed to locate and assess the condition of the trenches and exploration shaft. Float aircraft, landing on Otonadah Lake, may be the best means of access to the site.

8.0 Conclusions and Recommendations

Rehabilitation recommendations are provided for each site. The recommended course of action is based on a combination of environmental and public safety risks.

Several sites present a aesthetic concern; however, given the remoteness of most sites and the desire to deal with public safety and the desire to deal with environmental protection, it is recommended that aesthetic issues be addressed on the basis of available resources.

Cleanup of aesthetic issues may cost significant money with little benefit to public safety or environmental protection.

At some of the sites, not all features were located. It is recommended that attempts to locate these features (adits and shafts) be made as resources may allow.

It is important to note that ownership of exploration sites changes frequently in Saskatchewan. Every effort should be made to verify ownership status with current data prior to decommissioning work.

This report was prepared by Clifton Associates Ltd. on behalf of the P.A.N.S. Joint Venture for Saskatchewan Environment. The material in it reflects Clifton Associates Ltd. best judgement available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made base on it, are the responsibility of such third parties. Clifton Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report has been prepared in accordance with generally accepted engineering practice common to the local area. No other warranty, expressed or implied is made.

Site information was obtained from the sources listed in the report and site assessments. Clifton Associates Ltd. accepts no responsibility for any deficiencies or inaccuracies in the information provided in this report that are the direct result of intentional or unintentional misrepresentations, errors or omissions of the information reviewed.

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Clifton Associates Ltd. engineering science technology	**Appendix A**

Site Name	Neely Lake Shaft			
Site Location	**NAD 83**		**NAD 27**	
	Geographic	**UTM**	**Geographic**	**UTM****
				0641427 6616228
	Description Shaft located on south end of Neely Lake, West Shore			
Operator	Formerly Numac Oil and Gas			
Date of Site Audit	Sept 30, 2002	**Weather** Cool, 4°C. Partial Clouds, Breeze.	**Audited By** Greg Vogelsang	
Date of Operations	Small Prospect shaft sunk in 1936 - Borealis Syndicate Explored from 1950, 1953-1954, 1966-68 and 1987.			
Type of Mine	**1 Mineral** Gold		**2 Mineral**	
Type of Operation	**Mining High Grading** ✓	**Mining & Concentrate**	**Mining & Milling**	**Trenching/Other** ✓
Current Accessibility of Site	**1 Difficult (Float Plane)** ✓	**2**	**3**	**4 Easy (Road)**
Evidence of recent Visitation	None.			
Surrounding Environment	Area is accessible by float plane in Summer, snowmobile in winter. Area has relatively thin vegetation, jackpine - birch, poplar and thin understory. Topography is moderately rugged with relief ≈ 100 m maximum local.			
Background Gamma Levels	N/A.			
Mining Methods	**Underground** Shaft	**Open Pit**	**Trenching** ✓	**Other**

***Note: UTM Coordinates for NAD 27* ~~*are taken from Saskatchewan Energy and Mines Mineral Deposit Index*~~ were taken in the field using G.P.S.

Underground

Name/Number	Description		
	1- Shaft		
Location	0641427 6616228	located about 20 m off shoreline - can be spotted from air	
Dimensions	Circular 5 m diameter		
Status (open/closed)	open		
Stability of Closure	None		
General Condition	Open - vertical sides - danger		
Liquid Discharges at Time of Audit	None - Shaft water about 10 m below ground.		
Evidence of Previous Flooding/Discharge	None		
Evidence of Slumping-Description	None.		
Support Buildings	None.		
Additional Comments	Shaft is open and has vertical side slopes - steep drop from upslope. No ARD evidence.		
Risk to Environment	1 (low) 1	2	3 (high)
Risk to Wildlife	1 (low)	2 2.	3 (high)
Risk to Public Safety	1 (low)	2 2.	3 (high)

Open Pit

Open Pit No./Name	1	2	3
Specific Location	trenches -	0641520 6616386	
Dimensions	10m x 5m.		
Stability	Stable - no slumping - steep slopes.		
General Condition	open - not much danger.		
Liquid in Pit/Description Samples?	None		
Evidence of Previous Flooding/Discharge	None		
Evidence of Slumping	None		
Support Buildings	None.		
Extent and Type of Natural Vegetation Encroachment	moderate vegetation coming back on waste rock and trench -		
Additional Comments	Trench is not a public safety issue. It is located upslope from the shaft 150 m north and 100 m E.		
Risk to Environment	1 (low)	2	3 (high)
Risk to Wildlife	1 (low)	2	3 (high)
Risk to Public Safety	1 (low)	2	3 (high)
Other Information	Shaft is not a public safety or environmental concern. No evidence of acid generation		

Waste Rock

Description	Shaft Area.	Trench, NE of Shaft.	Trench near Shaft.
Location	adjacent to shaft 20 m from shore.	~~Gossan~~ NE of Shaft	10 m NE of Shaft.
Extent	5 m x 3 m.	5 m x 1 m adjacent to trench walls	3 m x 3 m pile
Stability of Pile	Stable.	Stable.	Stable.
Geology	Gneissic Quartzite	Quartzitic Granitic.	Quartzitic Dioritic (?)
ARD Potential	None Evident	None Evident	None Evident
Gamma Results	N/A	N/A	N/A
Extent and Type of Natural Vegetation Encroachment	Good - poplar encroaching.	Good - pine / poplar - understory.	Good - pine - poplar - good understory.
Additional Comments	Small amount of waste rock at the site - good stability - no steep or high slopes. No evidence of A.R.D. or sulphide mineralization.		
Risk to Environment	1 (low) ✓ 1	2 1 ✓	3 (high)
Risk to Wildlife	1 (low) ✓ 1	2 1 ✓	3 (high)
Risk to Public Safety	1 (low) ✓ 1	2 1 ✓.	3 (high)
Other Information			

Tailings Disposal Area

Description/Location			
Estimate Extent			
Estimate Depth			
Estimate Volume			
Type of Containment Structures			
Stability of Containment Structures			
Summarize Tailings Chemistry			
Potential for Acid Generation			
Gamma Results			
Evidence of Wind/Water Erosion of Tailings			
Extent and Type of Natural Vegetation Encroachment			
Risk to Environment	*1 (low)*	*2*	*3 (high)*
Risk to Wildlife	*1 (low)*	*2*	*3 (high)*
Risk to Public Safety	*1 (low)*	*2*	*3 (high)*
Other Information			

Additional Containment Works

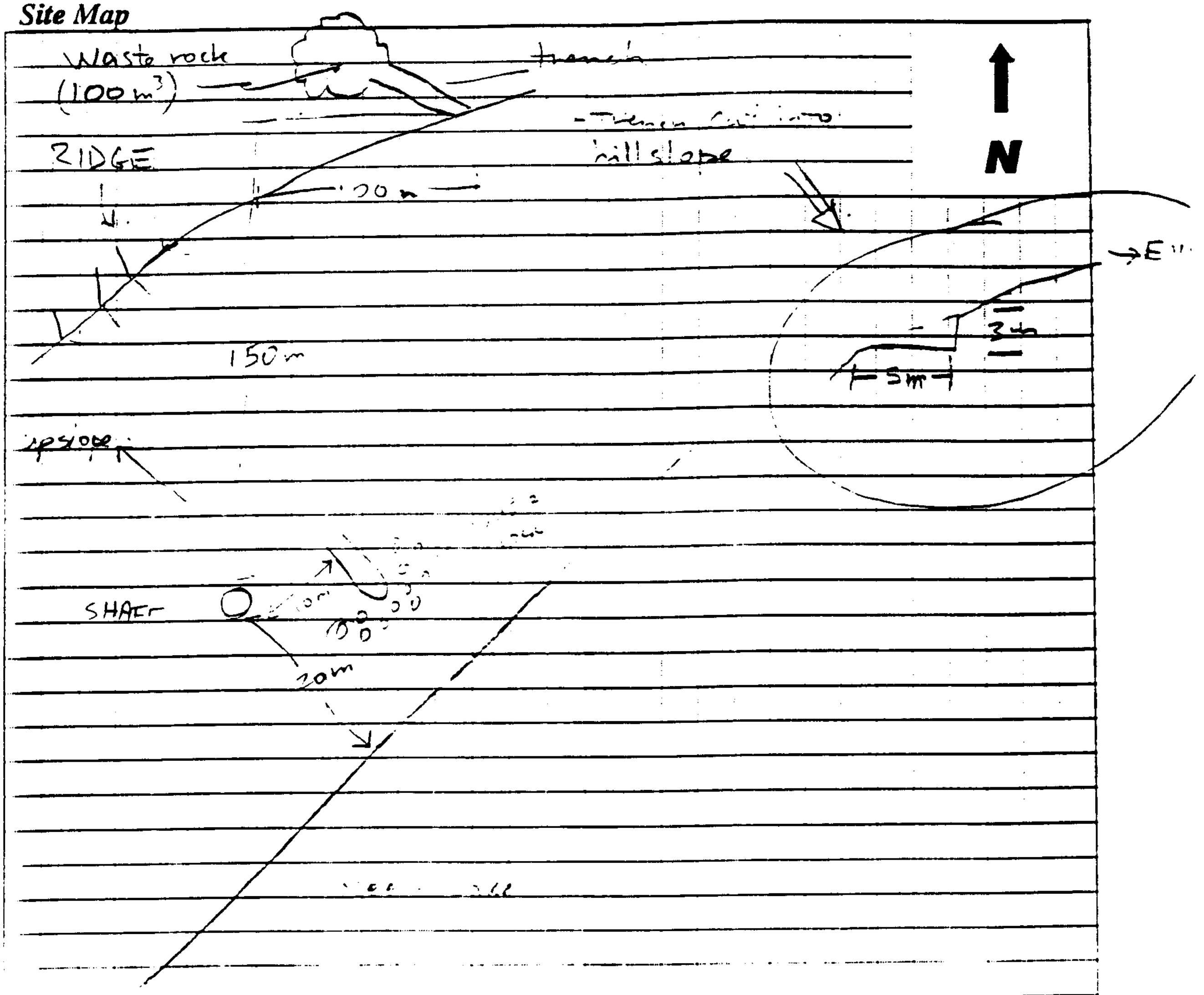
Description/Type			
Location			
Extent			
Condition			
Drill Holes			
Location (s)			
Dry or Liquid Discharges			
Drill Core Storage (Gamma results)			
Location(s)			
Estimate Extent and Quantity			
Method of Storage			
General Condition			
Waste Disposal Sites			
Location			
Estimate Extent and Volume			
General Condition			
Risk to Environment	*1 (low)*	*2*	*3 (high)*
Risk to Wildlife	*1 (low)*	*2*	*3 (high)*
Risk to Public Safety	*1 (low)*	*2*	*3 (high)*
Other Information			

Buildings

List Buildings Still Present			
Estimate Size			
Type of Construction			
Condition of Structures			
Evidence of Asbestos in Construction			
Contents			
Electrical Transformers			
Fluorescent Light Fixtures			
Stability			
Risk to Environment	*1 (low)*	*2*	*3 (high)*
Risk to Wildlife	*1 (low)*	*2*	*3 (high)*
Risk to Public Safety	*1 (low)*	*2*	*3 (high)*
Additional Comments			
Other Information			

Scrap Material			
Type	Assorted		
Estimate Amount	50 m³		
Risk to Environment	1 (low) 1	2	3 (high)
Risk to Wildlife	1 (low) 1	2	3 (high)
Risk to Public Safety	1 (low) 1	2	3 (high)
Residual Chemical on Site	No		
List Type	Drill Stem	lumber	Scrap metal
Estimate Volume of Each	20 x 3m' length	20 m³	20 m³
Type of Storage	None	None	None
Type of Containment (if any)	None	None	None
Risk to Environment	1 (low) 1	2 1	3 (high) 1
Risk to Wildlife	1 (low) 1	2 1	3 (high) 1
Risk to Public Safety	1 (low) 1	2 1	3 (high) 1
Mine Dewatering	No evidence of Dewatering lines.		
Locate Discharge if Possible	None.		
Additional Comments	Assorted debris around shaft area includes drill stem. lumber, pipes, cribbing, cable, tin.		
Other Information	Debris is aesthetic concern only. No evidence of environmental concerns.		

Site Map


Waste rock
(100 m³)
trench
RIDGE
hillslope
20 m
150 m
upslope
SHAFT
20m
5m
N

N